TECHNOLOGY DEPT.

FLIGHT MAGAZINE

SEPTEMBER 1957

50 Cents

PUBLIC LIBRARY
SEP 18 1957
DETROIT

Vol 46 #9

CESSNA 620 BUSINESSLINER

VIRGINIA COUNTRYSIDE

Best of breed

The new Fairchild F-27 propjetliner is the finest in its breed—it's America's first commercial propjet transport.

From nose to tail, the F-27 is a passenger-pleasing, profit-earning proposition. Air travelers will talk about its spacious comfort—fully air-conditioned and pressurized. They'll praise the hushed, virtually vibration-free ride—and they'll delight in the view from the big panoramic picture windows.

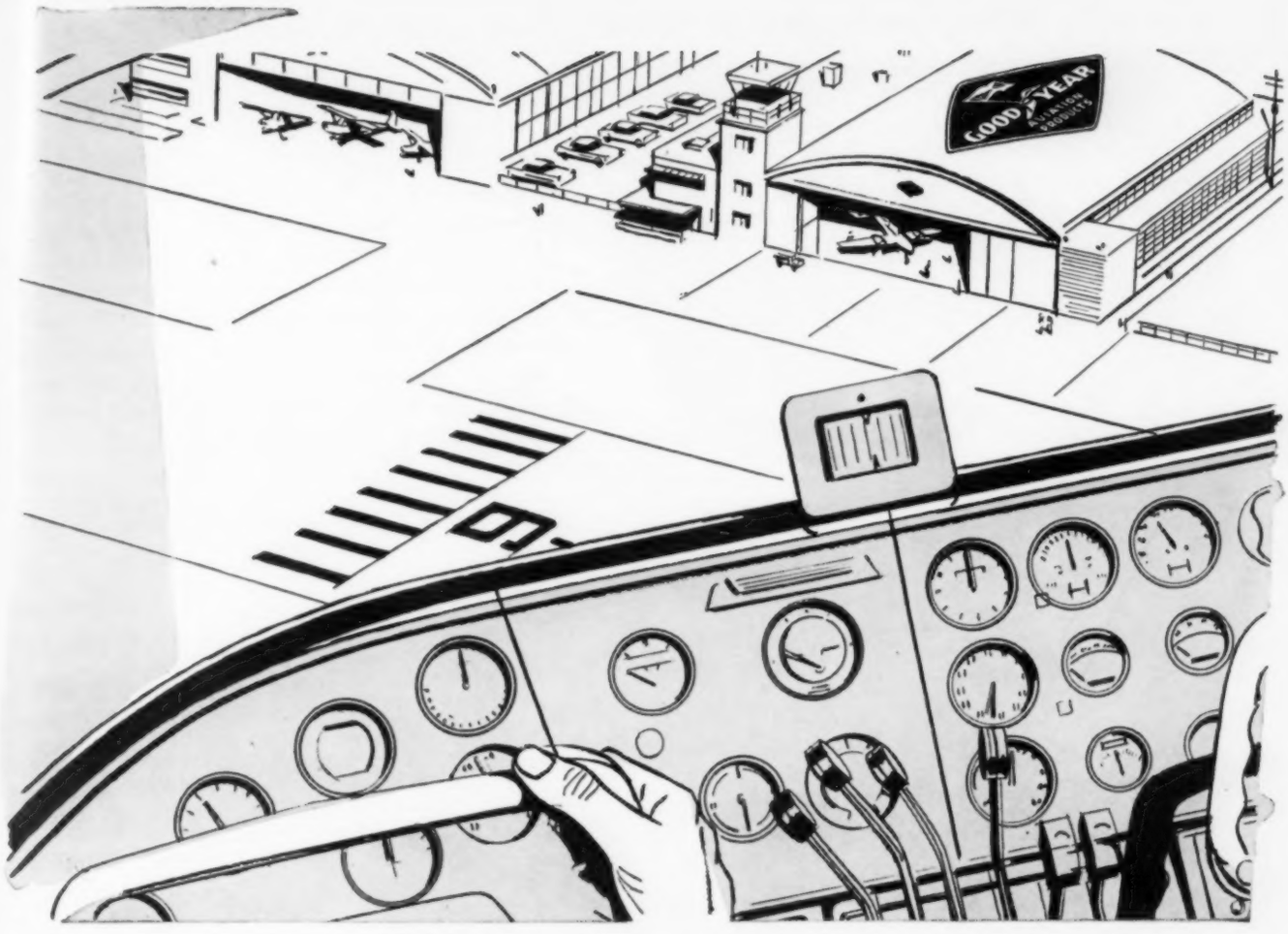
Airline operators will welcome the F-27 because it pays its way—on short trips at low altitude as well as on longer trips.

Address inquiries to: R. James Pfeiffer, Executive Director of Customer Relations, Fairchild Engine & Airplane Corporation, Hagerstown 15, Maryland.

FAIRCHILD

F-27

THE FINEST AIRCRAFT FOR AIRLINES, CORPORATIONS AND MILITARY SERVICES.



Green light for dependable service

The "green light"–your landing clearance–is always a welcome sign.

And there's another welcome sign here, too–the Goodyear "Sign of Service."

For at home or away, you have learned from experience that the man who displays this sign is dedicated to serving well your aviation needs–large or small–private or commercial.

It means that here you will find the highest quality aviation products – not only tires, tubes, wheels and brakes–but also a wide variety of other original equipment parts and accessories for the nation's vast fleet of private, business and executive aircraft.

It means that here you will find, at reasonable cost, prompt, efficient and courteous service backed by a time-proved reputation.

Wherever you fly, look for this sign–the Goodyear "Sign of Service"–your "green light" for dependable service.

GOODYEAR
AVIATION
PRODUCTS

Goodyear Aviation Products Distributors

AIR-PARTS INTERNATIONAL *Burbank, Cal.–New York, N. Y.*

PIEDMONT AVIATION, INC.
Winston-Salem, N. C.–Norfolk, Va.

VAN DUSEN AIRCRAFT SUPPLIES *Minneapolis, Minn.*
Boston, Mass.–Washington, D. C.–Teterboro, N. J.
Chicago, Ill.–Richmond, Va.

AIR ASSOCIATES, INC. *Atlanta, Ga.–Chicago, Ill.*
Dallas, Tex.–Miami, Fla.–Glendale, Cal.–Teterboro, N. J.

AVIATION SUPPLY CORPORATION OF FLORIDA
Tampa, Fla.–Orlando, Fla.

SKY SUPPLY *P.O. Box 873, Helena, Mont.*

VAN DUSEN AIRCRAFT SUPPLIES, *Southern Division*
Byrd Airport, Richmond 23, Va.

DENVER AIRPLANE SUPPLY
Stapleton Airfield, Denver, Colo.

THE DON HORN COMPANY
353 Madison Ave., Memphis, Tenn.

NATIONAL AVIATION SUPPLY CO.
906 Bowen St., Pittsburgh 12, Pa.

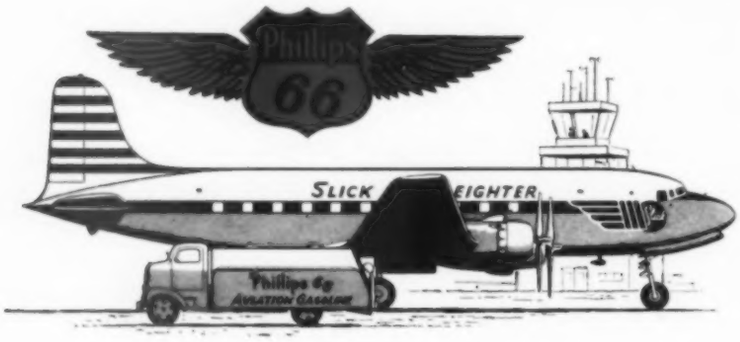
ATLANTIC AVIATION SERVICE, INC.
Box 1709, Wilmington, Delaware

STANDARD AIRCRAFT EQUIPMENT CO., INC.
P.O. Box 271, Mineola, Long Island, N. Y.

Phillips 66 LOOKS AHEAD with SLICK

Slick prepares for the future with a huge, growing fleet of all-modern air cargo carriers. These are teamed with fast trucks to speed cargo from shipper to airports, from airports to customers. Slick serves the nation's shippers with 280 tons of combined lift capacity, 100 scheduled flights per week, rates comparable to surface charges and a unique $1 minimum tariff. Slick has 27 stations in the United States, 60 interline agreements throughout the world.

A Slick Airfreighter refueling with Phillips *66* Aviation Gasoline at Wichita Municipal Airport. Wide cargo doors (right) provide ample room for loading Sky-Vans aboard a Slick Airfreighter. Sky-Van, a lightweight aluminum container, was devised by Slick Airways for the transportation of household furnishings by air.



● Today, Phillips 66 Aviation Gasoline gives dependable, efficient performance to Slick and other leading air lines, as well as to the military air services.

In step with the future, Phillips is a leading producer of *super performance* Jet Fuels for the latest designs in turbo-props and jets. And Phillips research continues to lead the way for development of fuels for the aircraft of tomorrow.

AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA

AIR Report
Significant Trends and News

FIRE THAT GUTTED AERO DESIGN AND ENGINEERING FACTORY at Tulakes Airport, Oklahoma City, last month probably will not seriously cripple Aero Commander deliveries. R. T. Amis, Jr., president, told FLIGHT MAGAZINE: "We suffered a total loss to the factory but we had enough completed airplanes outside to keep fairly close to original delivery schedules. The fire necessitates our speeding up the move into our new building now nearing completion. Our biggest loss was in tools, jigs and fixtures plus all work in process and inventory. It's unknown at this time whether or not insurance will completely cover our loss."

WATCH FOR a healthy and organized revolt against unreasonable CAA interpretations of requirements for supplemental type certificates by large and small aircraft repair and modification companies. Undue hardship and costly delays are being suffered by the operators in complying with engineering requirements demanded on even the most minute and orthodox installations and modifications. It's national in scope, not limited to any one region. "They're throwing the book at us," one executive reports. "We're all for putting a stop to bootleg parts and un-airworthy modifications. However, CAA engineering has gone too far in their interpretations of the STC requirements and unless they are modified soon, a lot of us will be out of business."

A NEW COMPLETELY-TRANSISTORIZED THREE-DIRECTIONAL AUTOPILOT weighing only 8 lbs. has been announced by Mitchell Industries, Inc., Mineral Wells, Texas. It is the improved Mitchell Airboy Co-Pilot, which eliminates tubes, relays and power supplies and features new circuits based on new principles. Its two servos are mounted directly on the control yoke. Installation requires only 5 to 10 man hours, depending on aircraft. Those for which the Mitchell is CAA approved include Apache, Bonanza, Cessnas and Navion.

PRICE OF THE BEECHCRAFT TRAVEL AIR, newest 4-place light twin powered by two 4-cylinder, 180-hp. Lycoming engines, has been announced as $49,500.

SAFEATHER SYSTEM INSTALLATION ON THE CESSNA 310 TWIN has been approved by a CAA supplemental type certificate issued to Aviation Instrument Manufacturing Corp., Houston, Tex., which produces it. The SaFeather system is an automatic power-loss indicator which monitors torque at the engine mount and indicates to the pilot the precise instant at which thrust becomes negative by means of an internally-lighted knob on the pitch-control lever for the appropriate engine. There is no auto-feathering provided. SaFeather is also approved for the Series 18 Beech and is used on the Howard Super Ventura.

A TRECKER AMPHIBIAN WITH SUPERCHARGED LYCOMING ENGINES has been delivered to Pan American Petroleum Corp., Tulsa, of which Ferrell N. Roberts is aviation superintendent. It will be used to service Pan American's Gulf Coast activities. The Trecker amphibian heretofore was known as the Royal Gull and is a product of Trecker Aircraft Corp., a division of Kearney & Trecker, Milwaukee.

A COMMERCIAL HELICOPTER SALES CAMPAIGN has been launched by Bell Helicopter Corp. with Fred Roscoe, new commercial sales manager, in charge. Territorial sales representatives are Steve Spaulding, Charley Strachan, Bud Orpen and Willie Littleford. Opening the intensive campaign, Bud Orpen sold two new 4-place 47J's and a 47G-2 to a South Texas ranch operation.

MOONEY AIRCRAFT has launched a $100,000 expansion program including establishment of a fully-equipped new sheet metal forming department.

(Continued on page 54)

FLIGHT MAGAZINE

SEPTEMBER, 1957 VOL. 46, No. 9

THIS MONTH'S COVER *shows the latest portrait of the new 4-engine, 10-place Cessna Model 620 executive transport with pressurized cabin. Deliveries are scheduled for next spring. The 620 is powered by four new-type 6-cylinder, supercharged Continental GSO-526A engines of about 340 hp. each and will have a cruising speed of about 250 mph. An AiResearch turbine auxiliary power unit furnishes pressurization, air conditioning, heating and electric power. Transport category certification has been under way for months.* —(Cessna Photo.)

Air Report—SIGNIFICANT TRENDS AND NEWS 5

Just Among Ourselves—EDITORIALS: CONTROL AREAS; 45,000 PIPERS; STRENGTH IN CONGRESS 13

Chicago's Helicopter Air Lift—BY WAYNE THOMIS AND TOM ASHLEY—A NEW DIMENSION FOR BUSINESS AND INDUSTRIAL FLYING 20

Fast Water Bombing for Ontario Brush Fires—AIRPLANES AT WORK 23

Portrait of a Company Air Fleet—BY JIM GREENWOOD—DETAILS ON SUNRAY OIL'S OPERATION OF FOUR BEECH SUPERS AND A LODESTAR 24

Shortest Distance Between Two Appointments—BY GEORGE E. HADDAWAY—WIDE ACCEPTANCE PROVES SUPER VENTURA SUCCESS 26

Record Fly-In Honors Piper—FLIERS SWAMP LOCK HAVEN AIRPORT FOR ROLLOUT OF 45,000TH PIPER 28

General Aviation Facilities Requirements Survey, Part 4A—OPERATIONS IN 1976 32

New Business in the Hangar—NATIONWIDE ROUNDUP OF INTERESTING DEVELOPMENTS AT MODIFICATION AND SERVICE CENTERS 48

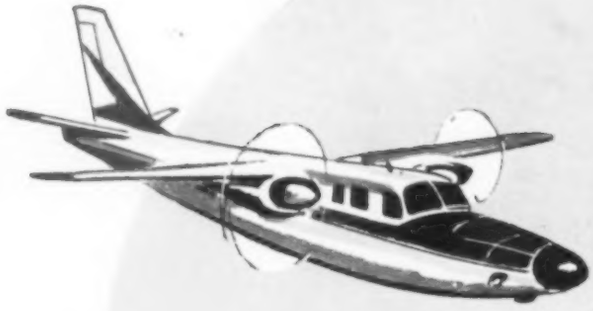
Airmen's Calendar—COMING EVENTS 54

GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; LOUISE ROBERTSON, Circulation; E. H. PICKERING, Consultant; P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas — Telephone TAylor 3-6191.

FLIGHT MAGAZINE, September, 1957, Vol. 46, No. 9. Published Monthly. Publication office, P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas. Price 50c single copy. Subscription rates: United States, one year $3.00; two years $5.00; three years, $6.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879.

Copyright, 1957, by Air Review Publishing Corporation.

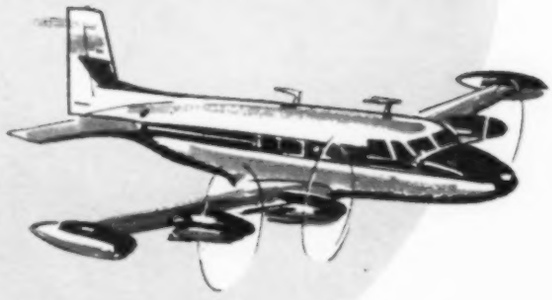
FOR FASTER, MORE COMFORTABLE FLIGHTS IN YOUR...



AERO COMMANDER

TWIN BONANZA

BEECHCRAFT SUPER-18



CESSNA 620

. . . or other aircraft where space, weight and power are at a premium!

RCA WEATHER AVOIDANCE RADAR (AVQ-50)

RCA Tmk(s) ®

Address inquiries to . . . Custom Aviation Equipment

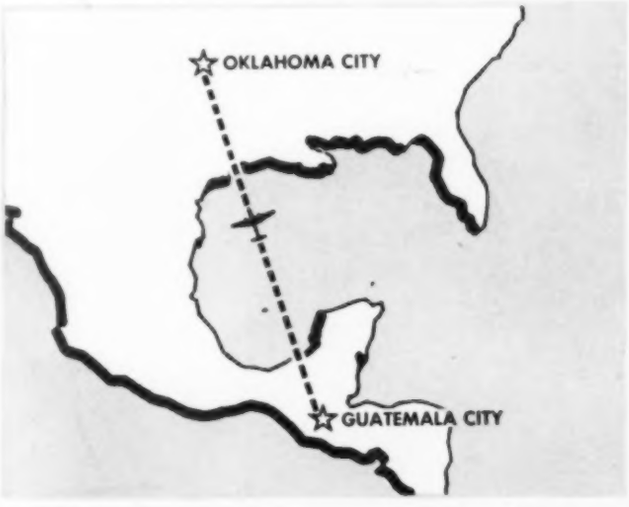
RADIO CORPORATION of AMERICA

11819 W. OLYMPIC BLVD. LOS ANGELES, CAL.

American Girl Breaks Russian Record In The Aero Commander 560-E

THE PILOT: 26-year-old Miss Jerrie Cobb of Ponca City, Oklahoma . . . a slender, attractive blonde who has been a licensed pilot since her 16th birthday.

THE PLANE: A standard production model of the new Aero Commander 560-E, a 7-place twin-engine executive transport with a 1625-mile range, plus safety fuel reserve.



THE ROUTE: From Guatemala City to Oklahoma City, a 1522-mile non-stop solo flight to beat the Russian record of 1235 miles for planes in the 3,858-pound to 6,613-pound class.

THE NEW RECORD*: A 1522-mile non-stop solo flight in eight hours and five minutes. Average speed was 190 mph. Remaining fuel, 30 gallons.

This story of superior range, flying comfort, high speed and ease of handling only begins to illustrate the reasons for Aero Commander's enthusiastic acceptance by pilots and executives the world over. Send for free brochure.

*Supervised by Aircraft Industries Association

AERO Commander

560-E - 680-S

AERO DESIGN & ENGINEERING CO • TULAKES AIRPORT • P. O. BOX 118 • BETHANY, OKLAHOMA

DOUBLE DIAGNOSIS TO PREVENT "HEART DISEASE"

...BY THE B&H JETCAL® ANALYZER

Two of the most important factors that affect jet engine life, efficiency, and safe operation are *Exhaust Gas Temperature (EGT)* and *Engine Speed (RPM).* Excess heat will reduce "bucket" life as much as 50% and low EGT materially reduces efficiency and thrust. Any of such conditions will make operation of the aircraft both costly and dangerous. The *JETCAL Analyzer pre*determines accuracy of the EGT and (interrelatedly) Tachometer systems and isolates errors if they exist.

The *JETCAL* ANALYZES JET ENGINES 10 WAYS:

1) The JETCAL Analyzer *functionally* tests EGT thermocouple circuit of a jet aircraft or pilotless aircraft missile for error *without running the engine or disconnecting any wiring.* GUARANTEED ACCURACY is ±4°C. at engine test temperature.

2) Checks individual thermocouples "on the bench" before placement in parallel harness.

3) Checks thermocouples within the harness for continuity.

4) Checks thermocouples *and* paralleling harness for accuracy.

5) Checks resistance of the Exhaust Gas Temperature system.

6) Checks insulation of the EGT circuit for shorts to ground and for shorts between leads.

7) Checks EGT Indicators (in or out of the aircraft).

8) Checks EGT system with engine removed from aircraft (in production line or overhaul shop).

9) Reads jet engine speed while the engine is running with a guaranteed accuracy of ±0.1% in the range of 0-110% RPM. Additionally, the TAKCAL circuit can be used to trouble shoot and isolate errors in the aircraft tachometer system.

10) JETCAL Analyzer enables engine adjustment to proper relationship between engine temperature and engine RPM for maximum thrust and efficiency during engine run (Tabbing or Micing).

ALSO *functionally* checks aircraft Over-Heat Detectors and Wing Anti-Ice Systems (thermal switch and continuous wire) by using TEMPCAL Probes.. Rapid heat rise . . . 3 minutes to 800°F! Fast cycling time of thermal switches . . . 4 to 5 complete cycles per minute for bench checking in production.

Tests EGT System Accuracy to ±4°C at Test Temperature

(functionally, without running the engine)

Tests RPM Accuracy to 10 RPM in 10,000 RPM (±0.1%)

The JETCAL is in worldwide use . . . by the U. S. Navy and Air Force as well as by major aircraft and engine manufacturers. Write, wire or phone for complete information.

B & H INSTRUMENT CO., INC.

3479 West Vickery Blvd. • Fort Worth 7, Texas

Sales-Engineering Offices:

VALLEY STREAM, L.I., N. Y.: 108 So. Franklin, LO 1-9220 • DAYTON, O.: 209 Commercial Bldg., MI 4563 • COMPTON, CAL.: 105 N. Bradfield St., NE 6-8970

target...the finest executive airplane

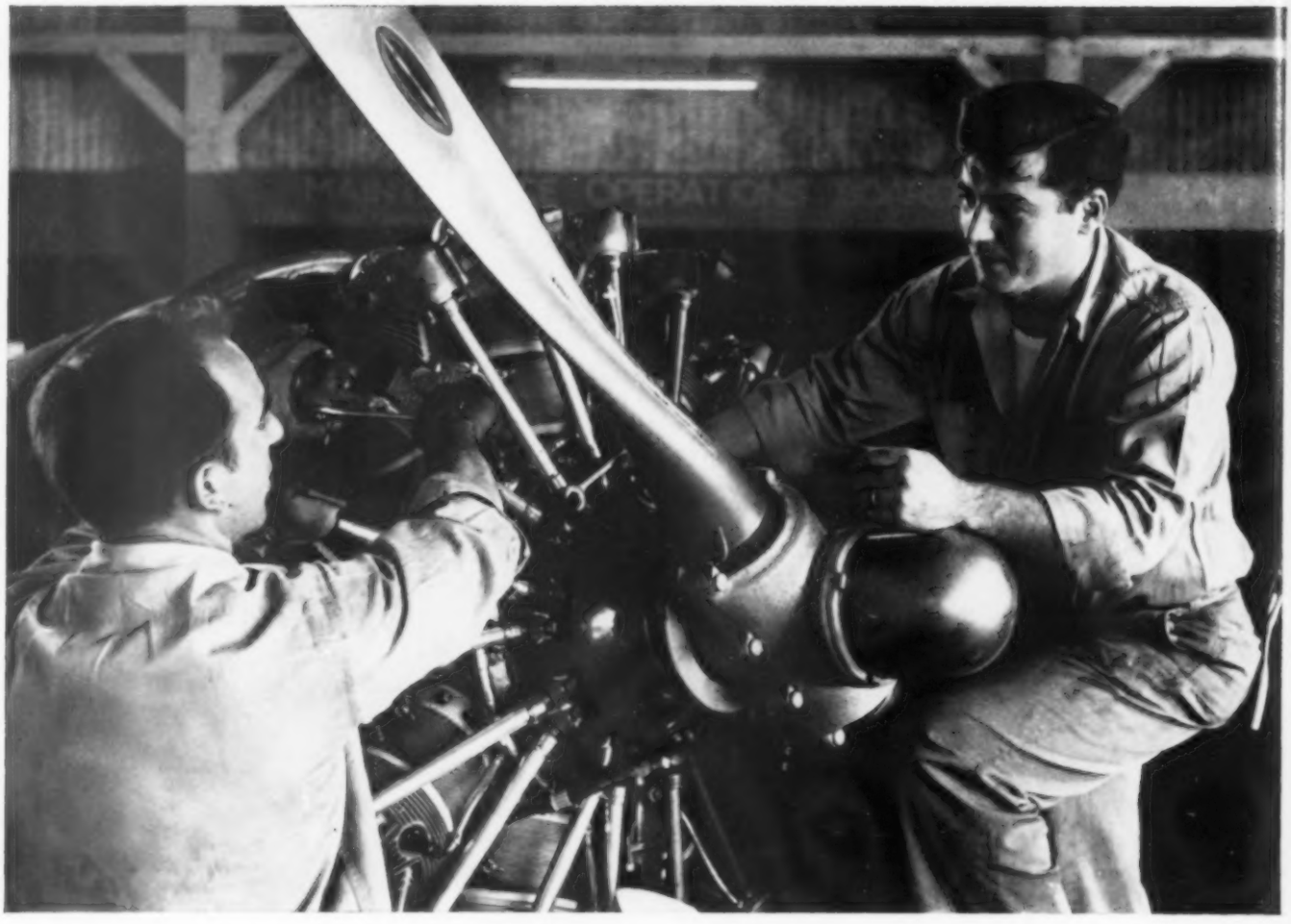
If your target is to overcome the seemingly impossible task of wasted time, set your sights on the SUPER VENTURA.

The SUPER VENTURA has made it possible for 23 of the nation's leading industrial organizations to achieve this goal. The SUPER VENTURA provides 300 M.P.H. plus speeds, 2,000 miles plus range and single engine performance equaled by few other aircraft.

The SUPER VENTURA is truly the airplane of the future available now.

For further information contact the Manufacturing Division of Howard Aero.

Howard Aero
INCORPORATED
MANUFACTURING DIVISION
P. O. Box 8247 • San Antonio, Texas



"It makes sense, Pete... the safest engine is a clean engine... and there's no cleaner engine than a Gulf-lubricated engine!"

Use new Gulfpride Aviation Oil Series D, the detergent oil, or Gulf Aircraft Engine Oil, the straight mineral oil. Either way, you'll be keeping your engine clean, and playing it safe.

Gulf oils lubricate engines thoroughly and efficiently and also keep engines clean.

That means increased periods between engine overhauls, because of less wear and tear on engine parts.

Gulf Aircraft Engine Oil is the finest straight mineral oil you can choose—keeps engines as clean as any straight mineral oil can. But for the greatest possible cleanliness, buy Gulfpride Aviation Oil Series D, the detergent oil.

Gulfpride Aviation Oil—Series D. Detergent Oil—for greatest possible cleanliness in radial, inline and horizontally opposed engines.

Gulf Aircraft Engine Oil—Straight Mineral Oil that minimizes sludge and oil inlet screen deposits, keeping your engine clean and safe.

GULF
AVIATION PRODUCTS

...the world's finest aviation products

TYPE 21 ADF
WEIGHS ONLY 19.7 POUNDS
Component Unit Weights:

Receiver, 6.8 lbs.; Loop, 4.3 lbs., Loop Housing, 0.5 lbs.; Indicator, 1.3 lbs.; Control Unit, 1.6 lbs.; Power Unit, 5.2 lbs.; CAA Certificate No. 1R 4-9

NEW LOOK in navigation aids

The Time Tested ADF Now In Less Weight, Less Space

The ADF is a basic air navigation instrument, used in all parts of the world, tunable to some 60,000 transmitters. But the important thing now about the ADF is that ARC has engineered an ADF system down to less than 20 pounds in weight, with a comparable saving in space.

Now pilots enjoy the advantages of dual installations of this compact miniaturized equipment in tolerable weight and space requirements.

The ARC Type 21 ADF is built to today's more critical speed and environmental demands. It has hermetic sealing of vital components, such as the entire loop assembly. It covers all frequencies from 190 kc to 1750 kc . . . operates on only 2.8 amps at 27.5 volts dc input. A significant feature is the extremely low loop drag – only two inches below the aircraft skin.

Ask your dealer for detailed literature.

Dependable Airborne Electronic Equipment Since 1928

Aircraft Radio Corporation BOONTON, NEW JERSEY

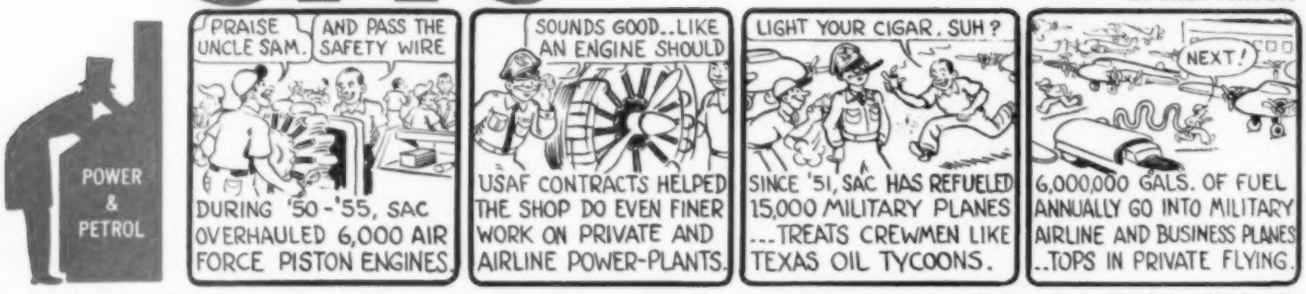
Miniaturized Automatic Direction Finders

Omni/Loc. Receivers • Course Directors • UHF and VHF Receivers and Transmitters • LF Receivers and Loop Direction Finders • 10-Channel Isolation Amplifiers • 8-Watt Audio Amplifiers • Interphone Amplifiers Omnirange Signal Generators and Standard Course Checkers • 900-2100 Mc Signal Generators

ARC

SAC Silver Jubilee Newsreel

BY JACK PATTON


POWER & PETROL
PRAISE UNCLE SAM. AND PASS THE SAFETY WIRE
DURING '50-'55, SAC OVERHAULED 6,000 AIR FORCE PISTON ENGINES.
SOUNDS GOOD..LIKE AN ENGINE SHOULD
USAF CONTRACTS HELPED THE SHOP DO EVEN FINER WORK ON PRIVATE AND AIRLINE POWER-PLANTS.
LIGHT YOUR CIGAR, SUH?
SINCE '51, SAC HAS REFUELED 15,000 MILITARY PLANES ...TREATS CREWMEN LIKE TEXAS OIL TYCOONS.
NEXT!
6,000,000 GALS. OF FUEL ANNUALLY GO INTO MILITARY AIRLINE AND BUSINESS PLANES ..TOPS IN PRIVATE FLYING.

AC, Aeroquip Corp., Bendix Products Div., B. F. Goodrich, Canadian Pratt & Whitney, Delco-Remy, Eclipse-Pioneer Div. (Bendix), General Logistics, Glidden Co.,

Folks are mighty welcome at Southwest Airmotive . . . whether in civvies or in uniform . . . for a cup of coffee . . . or a contract involving 6,000 engine overhauls. These cowhands had a special "Howdy" some years back for flyers from up Oregon-way.

Hamilton Standard, Lycoming, MacWhyte Cable Co., Miracle Power, Montrose Div. (Bendix), New York Air Brake, Pacific Div. (Bendix), Packard Electric,

In 25 years, SAC's physical lay-out has changed a lot, but the friendliness and the drama on its ramp, and in its shops, are pretty much the same. The reception posse for an F-80 pilot recently included 6 ecstatic Cub Scouts. For a pert blonde flyer, we brought out a real, live Texas Ranger, complete with the Lone Star flag.

Don't Miss SAC'S Silver Jubilee P&WA Engine Forum, Sept. 25th!

Pesco, Pioneer Central Div. (Bendix), Pratt & Whitney Aircraft, Red Bank Div. (Bendix), Scintilla Div. (Bendix), Utica Div. (Bendix), and Willard Batteries.

1932 —A QUARTER CENTURY OF LEADERSHIP— 1957

Southwest Airmotive Co.

LOVE FIELD DALLAS

DIVISIONS: KANSAS CITY, KANSAS / DENVER, COLORADO

Just among ourselves

Control Areas

THE Civil Aeronautics Board recently underwent reorganization in which the Bureau of Safety Investigation and the Bureau of Safety Regulation were integrated; henceforth the Bureau of Safety is now responsible for both the investigative and regulatory process of the CAB. Whether or not the CAB will be able to deal more positively under the new organization with the problem of our diminishing air space is yet to be seen. Right now, as a result of the air traffic rules conference held in Washington last June, they are attempting to bring some order out of admitted chaos as to our present definitions, minimums and certain operating procedures.

They are pushing for minimum weather conditions for VFR flight to 1,500 feet and five miles. Various spokesmen for general aviation are attempting to get controlled area airspace raised from the present 700 feet to 2,000, 3,000 or even 5,000 feet. Nearly everybody in general aviation agrees that we must get the wording changed in the definition of control area, "700 feet or higher above the surface" to at least an altitude that will permit VFR pilots to fly above the TV towers. It seems reasonable to us that 3,000 feet is the absolute minimum we should ask for. All the big airline and military jet traffic operates completely out of this area and it's high time general aviation flying was allocated non-controlled air space well over 700 feet above the surface.

The CAB Bureau of Safety welcomes comment from everybody affected. Even though you belong to an organization taking the stump on these matters under discussion in Washington, it would be wise to make your own personal feelings known and back up your argument with as many facts as possible.

45,000 Pipers

LAST month some 2,300 people in 650 airplanes dropped into Lock Haven, Pennsylvania, to help celebrate the roll-out of Piper's 45,000th airplane. It was an appropriate and well-deserved tribute to this great company and especially to the man who has guided its destinies for nearly thirty years, W. T. Piper, Sr.

In his few remarks to the crowd of well-wishers, Mr. Piper paid tribute to all the factors that have played important roles in making today's civil aircraft machines of great utility. He was especially full of praise for the Civil Aeronautics Administration's greatly improved navigational facilities "which keep us from getting lost." This modest man did not mention the fact that had it not been for him utilitarian aviation might never have arrived to the high point of development it now enjoys. Had it not been for his low-cost, easy-to-fly Cubs of the 1930's we might still be thrashing around trying to sell a handful of airplanes every year as they do in Europe and elsewhere. Mr. Piper and his low-cost theories of air transportation not only sowed the seeds for the healthy market the industry enjoys today but, just as significant, his trainers during the old Civilian Pilot Training Program and War Training Service made it possible to expand our air forces almost overnight.

A less rugged individual would have thrown in the sponge several times during the history of his business. Piper literally survived fire, flood and near bankruptcy, shutdowns due to market collapse and labor troubles. Today it is one of the nation's strongest aircraft enterprises with commercial sales outlets throughout the free world. If we ever become an air-faring nation a substantial share of the historical credit must go to W. T. Piper, Sr., and to his hardy band of co-workers, who are now looking toward the day when they roll out the 50,000th Piper airplane.

Strength In Congress

THE 85th Congress now pushing for adjournment accomplished a mighty high batting average in progressive aviation legislation. Most noteworthy is passage of the Airways Modernization Act, a bill to guarantee loans on new aircraft for the local service airlines (including helicopters) and legislation that strengthens our civil airport development program.

The real significance of this favorable legislative record lies in the fact that the aviation industry finally realizes Congress, and not the several Federal aviation agencies, direct the compass course of aviation development in this country. The purveyors of military equipment have known this for a long time and it's encouraging to see real evidence of civil aviation's ability to beat effectively on the doors of representatives and senators not only in considerable number but loaded with facts.

Just as significant, civil aviation is beginning to recognize its own strength, that Congress is still pretty much a grass roots organization. It was Senator Mike Monroney from Oklahoma and Representative Oren Harris of Arkansas who guided the aircraft loan guarantee bill through to success. This was an especially tough assignment in direct conflict with the economy wave and the trend away from "assistance" bills, even though monetary loss to the government isn't contemplated by guaranteeing the loans.

Now that the Airways Modernization Board has been officially approved it will be even more paramount that the forces of civil aviation keep strong congressional ties. By 1960 the AMB will have come up with their solution to the airways facilities problem. And, as stated in the Act, "It is the sense of the Congress that on or before January 15, 1959, a program of reorganization establishing an independent aviation authority, following the objectives and conclusions of the Curtis report of May 14, 1957, entitled 'Aviation Facilities Planning', be submitted to the Congress." There must be no let-down during the important days ahead, for civil aviation could be planned right out of the skies.

INSTALL THE FINEST *in your business aircraft*

Collins communication-navigation equipment gives you the finest with features like these: higher reliability, lightweight, integral power supplies, increased services, modern design and construction, easier maintenance, more flexibility of operation.

SEE COLLINS COMMUNICATION/NAVIGATION EQUIPMENT IN ACTION AT THE NBAA SHOW

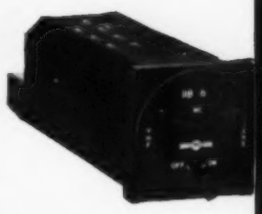
Collins exhibit at the 10th Annual NBAA Meeting and Forum in Denver, Colorado, October 2, 3, 4 will include four operating displays. You will be able to sit down and "work" Collins ADF, IFS, new 17L-8 transmitter, and other equipments. Make a stop at Collins exhibit top priority on your NBAA Show schedule.

51X-2 VHF Communication Receiver

The 51X-2 provides 880 crystal controlled channels with 50 kc spacing between 108.0 and 151.95 mc. Modularized construction. Also provides maximum VOR and Localizer instrumentation when used with the 344B-1 instrumentation unit. Cased in short ⅜ ATR weighing ten pounds. Optional power requirements are 2 watts at 27.5V DC, and 25 watts at 115V AC 400 cps or 27.5V DC. Self-contained power supply.

17L-8 VHF Communication Transmitter

The 17L-8 is a 3 watt VHF transmitter in a 3" diameter case 8-11/16" long for mounting on instrument panel. 90 consecutive 100 kc channels from 118.0 to 126.9 mc — crystal-controlled and weighs only five pounds including modulator-power supply which is separate unit — 7 x 3-15/16 x 3-9/16 — may be mounted anywhere. Transistorized modulator for 90% modulation with carbon mike. For 27.5V DC. Companion receiver available soon.

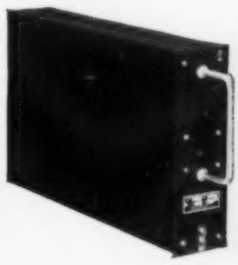


51Z-2 Marker Beacon Receiver

The 51Z-2 provides aural and visual indication of passage over a 75 mc marker beacon. Crystal controlled with transistor switches. Available in either single of three lamp configuration. HI-LO sensitivity controlled remotely. Modularized, contains only five tubes. Optional power supplies. ¼ short ATR. Weight: 3 lamp unit, 4.5 lbs.; 1 lamp unit, 3.8 lbs. Power (excl. lamp drain): approximately 15 watts (three lamp unit) — 115V AC or 27.5 DC.

51V-3 Glideslope Receiver

The 51V-3 provides 20 crystal controlled channels between 329.3 and 335.0 mc incorporating motor driven crystal switches for high reliability. With Collins 51R Navigation Receiver fulfills all ILS glideslope and localizer requirements. Includes power supply for which there are three optional arrangements with average demand at 25 VA or less; approximately 25 watts DC additional required during channel change. Weighs 6.4 pounds, short ¼ ATR case.

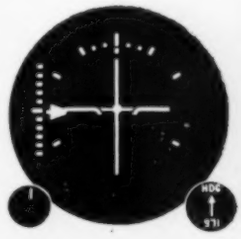


51Y-1/51Y-2 ADF Receiver

These receivers provide automatic or manual DF, AM, CW or range reception. Continuous electrical tuning from 90 to 1800 kc utilizing a digital indicator. Only 11 tubes. Sharp and broad bandwidth selector. Receiver weight 17 lbs. 51Y-1 ½ ATR; 51Y-2 ¾ short ATR. Power requirements are 15W at 27.5V DC and 35W at 115V 400 cps, in addition to 32W at 115V 400 cps, or 27.5V DC. Two integral power supplies available. Sealed or unsealed loops.

FD-104 Integrated Flight System

Collins has been active in Integrated Flight System development since 1948. Production versions of the IFS are in use in many aircraft types and in scheduled airline service. The Integrated Flight System presents basic attitude, navigation situation and steering information to the pilot. Two instruments provide a "forward view" presentation, on the Approach Horizon, and a "plan view" on the Course Indicator. Both displays are of the pictorial type, combining the available data in an unambiguous manner.



New circuit designs employ reliable magnetic amplifiers and transistors — no vacuum tubes are required. Power consumption and equipment temperature rise are reduced. Modularized throughout.

The latest Flight Director System incorporates easy-to-read 3" panel instruments and a ½ short ATR case for the steering computor. Weight 30.6 pounds. Power requirement: 100 VA start, 50 VA run (115 400 cps 1 ϕ plus 28V DC).

17L-7 VHF Communication Transmitter

The 17L-7 is a companion unit to the 51X-2. It provides 680 crystal controlled channels with 50 kc spacing. Frequency range 118.0 to 151.95 mc. Employs only 38 crystals. Maximum frequency change time, four seconds. Power output 25 watts. Weight: 14 pounds including integral power supply. Power requirement: 180W max. 27.5 DC-AC supply also available. Short ⅜ ATR case.

Collins CREATIVE LEADER IN AVIATION ELECTRONICS COLLINS

See your Collins authorized dealer or distributor. Many new ones are now being appointed.

Map Your Stops
at the HUMBLE Sign!

Under the Humble sign your plane will receive careful, thorough service — the same conscientious service that your car always gets at your favorite Humble service station.

And under the Humble sign, you'll find top-quality aviation gasolines and lubricants. These aviation products are produced by the most modern of refining procedures, and they are continuously improved to keep pace with the rapid advances in modern aircraft engines.

In Texas, on the highways or the skyways, make all your stops under the Humble sign.

HUMBLE

AVIATION PRODUCTS

HUMBLE OIL & REFINING CO.

THE *Versatile*
BEAVER AND OTTER

THE *Beaver*

Seaplane gross weight 5090 lbs. Payload 1412 lbs. with 200 miles range (landplane 1722 lbs.)

THE *Otter*

Landplane gross weight 8000 lbs. Payload 3098 lbs. with 200 miles range (Seaplane 2528 lbs.)

Available as
LANDPLANE - FLOATPLANE - AMPHIBIAN
(OR WITH SKIS OR WHEEL-SKIS)

Designed and built by

THE DE HAVILLAND AIRCRAFT OF CANADA LIMITED

POSTAL STATION "L" TORONTO ONTARIO

Western Sales and Service: Municipal Airport, Edmonton, Alta.

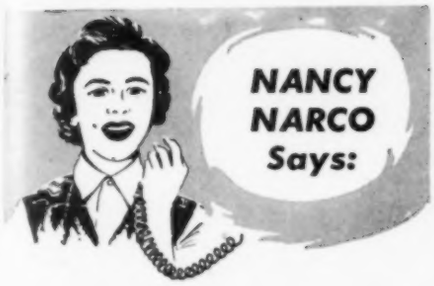
Pacific Coast Sales and Service: Vancouver, B.C.

1-57

That's why more Apaches by far have been built and sold than any other executive twin in the world...

MORE PEOPLE HAVE BOUGHT PIPERS THAN ANY OTHER PLANE IN THE WORLD

PIPER AIRCRAFT CORPORATION
LOCK HAVEN, PENNSYLVANIA



Like the Hi-Fi enthusiast says, "If you don't have Hi-Fi you only hear half the music." The same applies to the pilot who uses only Sectional or Regional (WAC) aeronautical charts.

Nothing wrong with charts, mind you, and you certainly want current ones in your airplane, but you do twice the work and get half the navigation information if you fly by charts alone. How come? That's easy — Omni. The way they're plugging in VOR stations nowadays, the regular charts just can't be kept up to date with the most important navigation assistance you can use.

For every prominent check point which a map might give you on a typical 200-mile cross-country, you've got a hundred check points with your Omni . . . actually, an infinite number of check points. In other words, with Omni you can check your position every minute of the way on almost any route. That is, if you have up-to-date radio charts. The Sectional charts, as you know, are revised now only twice a year.

I did a little checking, and between Boston and Washington there are eight new Omni stations along the route or on either side for cross bearings that aren't shown on the latest Sectional aeronautical charts. See what I mean? Flying by Sectional alone makes the Boston-Washington trip quite a task — three big charts to wrestle with plus a lot of pilotage, especially if the visibility is down and every town and city looks alike. With a radio chart, a single piece of paper does the trick plus giving you a lot more navigation information.

In case you're not familiar with radio charts, there are two sources. Jeppesen in Denver and the U. S. Coast and Geodetic Survey offer radio chart service on an annual subscription basis, providing you automatically with new route charts, whenever new radio facilities are added or frequencies changed.

These charts certainly save cockpit clutter and only infrequently will you have to refer to a regular chart. For instance, Jepp Chart 7-8 takes you all the way from Memphis to Albuquerque. Naturally, you should always have Sectional or WAC charts for your whole route on board for the final part of a trip to an airport not served by a radio facility, or for the occasional times when radio aids are not available.

With a good Omni and radio charts, life sure gets easier.

See you next month.

Nancy

NARCO • Fort Washington, Pa.

P.S. If you'd like a FREE Copy of our little booklet "How to Fly Omni," just write me, c/o Narco, Fort Washington, Pa.

MOST POPULAR BY FAR

narco SUPERHOMER

Single Package VHF Communications and VOR Navigation Unit at Lowest Cost

Here's the most popular VOR/VHF radio combination in use today. In a single, compact unit you get crystal-clear two-way VHF communications *plus* VOR navigation that takes the worry and guesswork out of cross-country flying.

Incorporating improvements and refinements evolved in five years of use in thousands of business airplanes, this latest model of the Superhomer is more than ever the right answer for low cost radio equipment. High volume production, plus maximum design simplification, makes the Superhomer available at hundreds of dollars less than any equipment of similar usefulness and reliability.

NOW WITH *12 Channels*
PLUS THESE OTHER GREAT FEATURES

- **VHF receiver (108 to 127 mc)**
- **Accurate VOR navigation**
- **Self-contained power supply**
- **Weighs only 11 pounds completely installed**
- **Complete unit measures only 4¾" by 6¼" by 10¼"**
- **Fits any standard glove compartment**
- **Priced, with three crystals, at only $499.50**

Why not replace your old radio with a brand new Superhomer? Or, if you are not now enjoying the benefits of reliable two-way VHF communications and the pleasure of flying cross-country via VOR, why not see your Narco dealer for full details on the remarkable Superhomer backed by nation-wide Narco service?

narco

NATIONAL AERONAUTICAL CORP., FORT WASHINGTON, PA.

Conrad Hilton Hotel (left) and Motorola, Inc. (above) have heliports. Dave Kutner of Motorola is seen with customer arriving in an HAL Bell.

Chicago's Helicopter Air Lift

By WAYNE THOMIS and TOM ASHLEY

FOR helicopters to prove useful and profitable in performing wilderness jobs no other machine could do was one thing which came naturally to the whirlybirds. But to work a chopper profitably in the very heart of a big city has been something far more difficult to manage — an elusive dream undertaken by many but never forged into reality until recently. Two years of a new plan of operations have proved that it can be done — if the formula is practical and if a hard-driving salesman works night and day at the task.

The proof is available for all to see in one of America's busiest industrial cities — Chicago, where a man with a plan has put across a formula which has proved so successful that its application on a nationwide basis is practically assured. The operation is known as Helicopter Air Lift and the man who made it go is quiet, unassuming but hard-working Hal C. Conners, who quit a manufacturing job with 16 years of seniority to tackle and perfect what is one of the helicopter industry's most impressive selling jobs.

Bearing no relation whatever to the very promising and rapidly-growing helicopter airline ventures which are being sponsored by the Civil Aeronautics Board in Chicago, Los Angeles and New York, Helicopter Air Lift is strictly on its own as a fixed-base operator's attempt to make helicopters operate on a pay-as-you-go basis. There's a thick file of applications pending in Washington from operators who want and will need CAB help in establishing scheduled helicopter air service in dozens of American cities. But Helicopter Air Lift hung out its shingle on a different basis — Hal Conners' key to success is that he avoided airline aspirations completely, since Chicago already had a scheduled helicopter airline, one of the most efficient in the country and therefore one of those most likely to succeed in becoming permanent. All Conners wanted was unscheduled flying, a kind of operation resembling the airplane charter business in some respects and the air taxi business in others.

His approach was to search through the 6,000-odd industries located in Chicago and sell his idea so thoroughly that enough of them would sub-

Marshall Field & Co. executives use HAL copters and are shown landing atop store in their new suburban shopping center at Skokie, 13 minutes from downtown Chicago by Helicopter Air Lift but 90 minutes by auto.

HAL copter picks up Harry J. Underwood at his Glenview home and lands him at Shell Oil's Argo plant (right).

scribe to his services to justify the purchase of a helicopter at the bank, so to speak. It wouldn't take many to finance a $35,000 3-place Bell Model 47. This was in the fall of 1955. To put across his sales talk, Conners borrowed a movie which Shell Oil had produced, extolling the virtues of helicopters in the interests of building more aviation business for the petroleum industry. Conners was so convincing that he was operating not one but four Bells within a few months. He recently added a fifth Bell, this one being a 4-place Model 47-J.

His first contacts were Motorola, Shell Oil, Union Tank and Texas Illinois Natural Gas (now Natural Gas Pipe Line Company of America). They signed up on an arrangement guaranteeing to use 200 hours of helicopter taxi service a year—enough to buy the first helicopter and operate it 12 months at a modest profit covering all operating costs and insurance, with Conners putting his cards on top of the table. There are no mysteries involved in estimating the operating costs of the little Bells, which have some 2,000,000 hours behind them. Extensive operating experience the world over has enabled Bell Helicopter Corporation, the manufacturer, to blueprint costs for anyone interested. Helicopter transportation, as young as it is, has long since become prosaic and staple merchandise as a commodity to be marketed

Midtown approaches in Chicago include river and railways.

among those who can use its advantages.

Today, industries subscribing to Helicopter Air Lift in Chicago comprise a list resembling that city's blue book of progressive enterprises. In addition to the original four subscribers, Conners services companies such as A. B. Dick, Admiral Radio, Stepan Chemicals, newspapers including the Tribune, American and Sun-Times, Continental Can, Chicago Aerial Industries (photography), Cook Electric, Diamond T Motors, Edgewater Beach Hotel, Franklin Supply, Ford Aircraft Engine Division, Helene Curtis Industries, Hilton Hotels, International Ampitheater, International Minerals and Chemicals, Jewel Tea, Marshall Field, National Broadcasting Company, Podbielniak (laboratory and processing equipment), Riddle Airlines (for critical cargo), Sellstrom Manufacturing, Standard Oil, Thor Power Tools, White Cap Co., Illinois Toll Road, CKG Associations (toll road contractors), Commonwealth Edison, Bell & Howell, Steel City Testing Labs, Coburn Films and Bob Atche Films (Chicago has become the country's industrial movie producing center) and other industries.

Diamond T truck factory subscribes to HAL service.

To subscribe to Helicopter Air Lift, a firm can contract for as little as 25 hrs. of flying a year, at $75 per hour. The open rate is $85 per hour. For 50 hours or more on contract, the rate drops to $70 and for 100 hours it is only $65 per hour. Larger blocks of flying time are negotiated. These rates are for the plush 47-H, which is the executive helicopter pioneered by Bell and widely successful.

What Helicopter Air Lift offers which makes subscription use of its machines especially attractive is its retention of full and complete responsibility for all operational details. For his five helicopters, Conners maintains a staff of five top-grade pilots, four highly-skilled mechanics, hangar and shop space and equipment, including spare parts and specialized tools, and complete insurance coverage for passengers and public liability as well as for the machines themselves. Conners believes he enjoys the lowest insurance rates available for helicopters, this because of his safety record and his high standards of maintenance and flying operations. His shop is Bell authorized and approved and he adheres strictly to the manufacturer's recommended practices.

Also the complete responsibility of Helicopter Air Lift is the problem of flying operations as they are affected by conditions in and around a built-up metropolis such as Chicago. Here is the critical area for rotary-wing aviation, for without expert consideration and handling, the helicopter's usefulness in city areas is doomed before it has an opportunity to develop. Unfair regulations and restrictions against city flying can chain the marvelous chopper to airports, despite all of its virtues of vertical take-off and landing, hovering and sideways and even backward flight movements. There are well-meaning people, even within the aviation industry, who might succeed in strangling the big-city helicopter under a welter of red tape in misconceived notions of safety requirements, for example, and one of the biggest problems facing the helicopter industry is how to cultivate a factual understanding among regulatory agencies and the public at large. Operators such as Conners have gone a long way in the solution of this problem and it is believed the state of Illinois and the city fathers of Chicago will come up with legislative

Fortunately, the Chicago midtown models for the guidance of other areas.

(Continued on page 43)

Cook Electric's sign is seen on the HAL copter shown above making a pickup at the Cook Technological Center at Morton Grove. Left to right by the Franklin Supply HAL Bell below are R. C. Brown and Mrs. Brown of Hudson Bay Oil Co., Calgary, and Jene Harper, president of Franklin Supply, who has used copters to fly several thousand customers. Hal Conners, HAL manager, is shown at right locating his O'Hare Field headquarters on a Chicago map.

Otter fills water tanks while skimming lake, dumps 1,800 gals. per hr. 100 ft. above brush fire located 2 miles from lake.

Fast Water Bombing For Ontario Brush Fires

HIGHLY refined methods of using light planes to fullest advantage are serving forest conservation and protection against fire and other threats in 400,000 square miles of Ontario's Northland, Canada. There the Ontario Department of Lands and Forests operates an Air Service Division, which is equipped with more than 40 singleengine de Havilland DHC-2 Beavers and five single-engine DHC-3 Otters.

The latest refinement is experimentation to improve on water bombing. Four-gallon plastic or paper containers carrying water are dropped on small fires to extinguish them before they become a major conflagration. Lands and Forest Department engineers have devised 90-gallon tanks installed on the floats of an Otter. "A plane flying in the neighborhood of 100 ft. can concentrate a 180-gal. drenching and really saturate the area," says District Forester William Cleaverly. "Pumps and water bombs are ineffectual when compared to the new tanks.

The tanks incorporate a feature by which they can be reloaded with water while the aircraft skims across the surface of a lake, without landing. An intake pipe for each tank is located on the step of the float. The pilot refills with 180 gals. of water in only 18 seconds while skimming across the water. Ontario's Northland is 75 per cent land and 25 per cent water, so that a lake is always near. In the air over a brush fire, the pilot flips a switch and the two float-mounted tanks revolve and open to dump their contents. Given a situation where a fire is burning within 2 miles of a lake, a float-tank-equipped Otter can deliver 1,800 gals. of water drench within an hour, extinguishing a fire

(Continued on page 56)

Over 40 Beavers and 5 Otters are operated by Ontario agency. Beavers below are seen dropping a portable pump by parachute and unloading supplies at wilderness lake. They protect area of 400,000 sq. miles.

The author is shown interviewing Herman G. Arnspiger (facing camera), who manages Sunray Mid-Continent Oil's flying operation. The fl and a Lockheed Lodestar some 3,000 hrs. annually all over America from its Tulsa, Oklahoma base. Sunray has operated compan plan

Portrait Of A Company Air Fleet

By JIM GREENWOOD
Beech Photos by Jim Yarnell

COMPANIES contemplating their first step into the expanding field of corporate flying would do well to take a few tips from Sunray Mid-Continent Oil Company of Tulsa, Oklahoma. One of the fastest growing organizations in the petroleum industry, this firm has been operating company planes profitably for the past 12 years. Its present fleet of four Beechcraft Super 18 executive transports and one Lockheed Lodestar will fly some 3,000 hours next year over a network of routes that if stretched end to end would span more than half a million air miles.

Sunray Mid-Continent planes fly from coast to coast, from Canada to South America. They speed company personnel to meetings with investment bankers in New York, to government hearings in Washington, to executive conferences in the Los Angeles office, and to field points in every oil producing state where Sunray Mid-Continent is active.

The man behind this impressive air service is personable Herman G. Arnspiger, a flier for 30 years. He joined Sunray in 1945 after convincing C. H. Wright, then president and now board chairman of Sunray Mid-Continent, that his company could trim transportation costs and save valuable time on business trips by flying executives, engineers, geologists, field superintendents and other employees in its own aircraft. So successful has been this switch to personal air transportation that one top official recently reported, "Our flight operations in the past few years have saved us more money than any other department."

Starting out with a Lockheed 12, the company soon added a nine-passenger Lodestar. In 1952 it dropped the smaller Lockheed and acquired two new Beechcraft D18S transports. Meanwhile, the company itself was expanding in every direction.

Originally known as Sunray Oil Corporation, the firm in 1955 merged with Mid-Continent Petroleum Corporation to become Sunray Mid-Continent Oil Company. D-X Sunray Oil Company is its refining and marketing subsidiary and Mid-Continent Pipe Line Company (a subsidiary of D-X Sunray), the crude oil transportation unit. As the parent organization, Sunray Mid-Continent finds and produces oil, its subsidiary D-X Sunray refines and sells D-X products, and Mid-Continent Pipe Line hauls crude oil. Today, Sunray Mid-Continent ranks among the country's fifteen leading oil companies and it is still growing.

eration. The firm operates four Beechcraft Super 18's ompany airplanes for personnel transportation since '45.

Along with a planned, progressive expansion, its aviation department has kept pace with increasing requirements for air transportation by adding new equipment and personnel. Two years ago the company purchased three new Beechcraft Super 18's, trading in one Model D18S and transferring the other to Oklahoma-Mississippi River Products Line, Inc. (OMR), an affiliate company. This summer it took delivery of a fourth Super 18, assigning the plane to OMR as replacement for the D18S. However, all five aircraft, including OMR's Super 18, are operated as a fleet by Sunray Mid-Continent's aviation department.

When the company first considered phasing out Model 18 planes in favor of new Super 18's, there was some concern as to operating costs of the heavier, faster Beechcrafts. Arnspiger has since demonstrated that as travel demands continue to soar, capital investment in new aircraft will — over the long pull — actually save even more dollars. To begin with, he found that a Super 18 can be flown for the same cost as its predecessor. Flying each plane 600 hours a year, his av-

(Continued on page 40)

Sunray trip begins at dawn with company personnel boarding Super 18. Pilot and co-pilot are always ready to go on schedule.

Round-the-clock dependability of Super 18 enables Sunray to obtain full utilization of the Beech, a complete miniature airliner.

Average Sunray load is three or four passengers. Abreast of the news as they fly are H. O. Harder, left, vice president and exploration manager; I. W. Pilkington, right, division land manager, and two other Sunray employes.

Here's the sixteenth Super Ventura delivered since September, 1955. It went to Ohio Oil Company's fleet at Findlay, Ohio, with Dick Yoakum as pilot. Ohio Oil operates one of the largest corporate air fleets in the world.
—(FLIGHT MAGAZINE Photo.)

Shortest Distance Between Two Appointments

By GEORGE E. HADDAWAY

IF you keep up with hangar talk you're bound to have sensed the tremendous impact being made on the executive airplane market by the 300-mph.-plus, long-range Howard Super Ventura. Two short years ago the hangar flying experts were saying, "Old Dee will never make an airplane out of that." Today the tune has changed considerably and with over $10 million worth sold the usual remark is, "Boy, what an airplane!" A lot of crow has had to be digested in many quarters over the success of the Howard Super Ventura enterprise.

Ten years ago D. U. Howard, age 27, walked out of the Slick Airways shops on the San Antonio International Airport and established the Howard Aero Service, offering general airport services of fuel, parts, mechanical work and later on, new and used airplane sales. It wasn't long before the little service company had built up a reputation for being able to perform expert mechanical and conversion jobs on any and all types of flying equipment. Customers began to come in from as far north as Canada and as far south as Mexico.

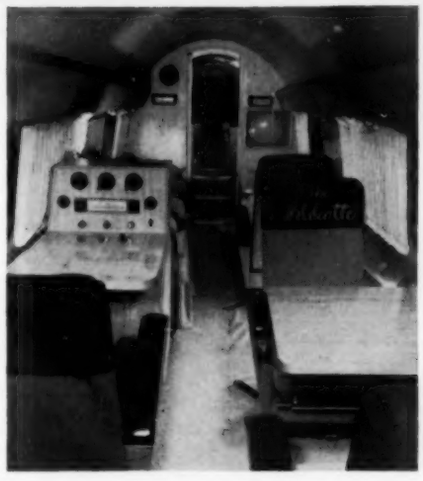
After considerable explorations Howard came to the conclusion in early 1954 that it would be possible to make a real executive airplane out of the old Ventura. Ed Swearingen, who had been with him in the early days of Howard Aero Service, and one of the principal engineers of the Learstar conversion out at Santa Monica, was called back to San Antonio to captain the ambitious little team that was to rip open the first Ventura from stem to stern, completely re-engineer it and transform it into the fastest, longest-range executive transport at the lowest possible cost. The first prototype was flown one year later in May of 1955. The first delivery—a custom made job—went to the Plymouth Oil Company in September of that same year. In June of 1956 the first production airplane was delivered to Copano Oil Corporation. As of August, 1957, airplane No. 22 is about ready for flight test and delivery to the Cluett-Peabody Company of New York. This is an amazing record in engineering, production and sales for any branch or segment of aviation. The Howard customer list is a veritable "Who's Who" of blue-chip U. S. business enterprise. The Howard Super Ventura, in short, has been accepted.

Visitors to the Company's Manufacturing Division on the San Antonio Airport apparently go there expecting to see just another airplane

HOWARD SUPER VENTURA
Howard Aero, Inc., Data

	Engine Models		
	AM-10 2,000 hp.	AM-5 CB16 2,400 hp.	AM-7 CB17 2,500 hp.
Engine critical alt., low blower, ft.	8,000	9,200	7,100
Engine critical alt., high blower, ft.	16,200	16,800	15,000
Accelerate-stop dist., ft.	4,737	4,650	4,475
Rate of climb @ 165 mph., fpm.	2,000	2,170	2,360
SE en route rate of climb, fpm.	405	487	581
SE en route rate of climb @ 5,000 ft., 165 mph., fpm.	315	390	485
SE svc. clng. @ en route V-1 spd., ft.	9,400	12,200	12,200
V-1 speed, mph.	Variable	135	135
V-2 speed, mph.	135	135	135
Cruising speed @ 10,000 ft., 1,100 hp. each engine, mph.	300 plus	300 plus	300 plus
VMC speed, mph.	100	110	112
SE take-off distance to clear 50 ft., ft.	5,800	3,057	2,822
Landing roll, ft.	2,912	2,912	2,912
Stall speed @ 29,000 lbs., flaps up, mph.	113	113	113
Stall speed @ 29,000 lbs., 20% flaps, mph.	105	105	105
Stall speed @ 29,000 lbs., 100 % flaps, mph.	90	90	90
Range at 10,000 ft. plus 45-min. res.—			
240 mph., miles	3,000	3,000	3,000
260 mph., miles	2,600	2,600	2,600
280 mph., miles	2,280	2,280	2,280
300 mph., miles	2,000	2,000	2,000
Power loading, lbs. per hp.	7.25	6.0	5.8
Wing loading, lbs. per sq. ft.	53.4	53.4	53.4

NOTES: Performance is at 29,000 lbs. gross weight and at sea level unless noted. Maximum gross weight is 31,000 lbs. VMC speed is minimum control speed, 112 mph., the minimum speed at which the airplane can be controlled with one engine inoperative, good engine at full take-off power, bad engine with propeller windmilling in low pitch, flaps up and gear down. V-1 speed is the minimum critical engine failure speed, 135 mph. and the same as V-2. V-2 speed is the minimum take-off climb speed, 135 mph., the minimum speed at which it is considered safe to attempt to complete the take-off with one engine inoperative. Single-engine en route climb speed is 165 mph.



Triangle Conduit & Cable's Super Ventura (above) is pictured with radar nose and large picture windows. Comfortable interiors with oversize furnishings below are looking aft (left) and forward (right) in other Super Venturas.

—(Howard Aero Photos.)

modification operation and some act as though it might even be a blacksmith shop. But what meets their eyes is a full blown aircraft manufacturing enterprise with jigs, fixtures, tools, dies and equipment of the latest vintage and half a thousand experienced workmen busily engaged in the highly technical occupation of turning out a modern, high-speed transport. Any similarity to the old Ventura is completely unintentional. Over 80 per cent of the process is complete remanufacturing.

They first take a low-time airframe (averaging about 500 hours total time), strip it to the bare metal, lengthen the fuselage and start from there. They wind up with a practically new airplane with zero-time engines, propellers, completely new fuel system, electrical and hydraulic systems and custom interiors according to the wants and tastes of the individual purchaser. The Supers have been averaging out about $450,000 to $475,000 per copy depending upon the choice of engines, propellers, interiors and electronic gear, including radar and autopilot. One recent delivery had over $127,000 worth of electronic equipment alone. The basic airframe costs $290,000 and engine installations are available from $35,000 to $121,725. Custom interiors have been running between $30,000 to $35,000.

To the uninitiated these figures might seem staggering; but we ask, along with the Howard engineers, production and sales crews, "Where else can you buy a 300-mile-an-hour-plus transport for less than a million bucks and not have to wait three years or more for delivery?"

Unlike most conversions you just can't overload the Howard Super. Maximum gross weight is 31,000 pounds. With the AM-5 (CB-16) 2400-hp Pratt & Whitneys, range with 60 per cent power at 10,000 feet is 2,200 miles or at 50 per cent (economy cruise) power it's 2,600 miles. Little wonder that one corporate executive recently referred to his Howard Super as "the shortest distance between two appointments"!

The aircraft operations manager of another customer, one of the largest corporations in America, recently stated, "As far as I am concerned there is no other aircraft of its class or size which can offer the same speed, reliability or well proven components, or safety margins, which, of course, are primary." The chief pilot of another major concern that took delivery this year states that from a pilot's viewpoint the safety features, such as the fuel system, single-engine perform-

(Continued on page 37)

SUPER VENTURA OWNERS

With Pilots

1. Prototype. 2. Plymouth Oil, Pittsburgh, Stan Siggins. 3. Copano Oil, Victoria, Tex., Hub Gayle. 4. National Steel, Pittsburgh, Bob Hamilton. 5 and 21. Republic Steel, Cleveland, Everett Dyer. 6. Triangle Conduit & Cable, Morristown, N. J., Larry Lacey. 7. Gulf Oil, Pittsburgh, John Rowan and Walter Kupchac. 8. Fruehauf Trailer, Detroit, R. J. Kusse. 10. Gamble-Skogmo, Minneapolis, Donald Stimson. 11. Socony Mobil Oil, New York, C. E. Morris, manager. 12 and 20. National Distillers, New York, R. K. Smith. 13. Kudner Agency, New York, R. K. Smith. 14. E. Cockrell, Jr., Houston, Tom Neyland. 15. Firestone Tire, Akron, Tom Herman. 16. Ohio Oil, Findlay, Dick Yoakum. 17. Standard Oil, Chicago, Wayne Brodine. 18. Coca Cola, New York, Ralph Whitworth. 19. United Transports, Oklahoma City, Joe Sneland. 22. Cluett, Peabody, New York, Ernest Marquis.

Lock Haven airport looked like this on August 17 when 650 private planes carrying 2,300 persons dropped in to honor W. T. Piper. They landed at a rate of 8 per minute without tower instructions.

Record Fly-In Honors Piper

MORE than 650 private and business planes swarmed onto the 200-acre airport at Lock Haven, Pennsylvania, most of them in a period of only 2 hours, to honor W. T. Piper's roll-out of his firm's 45,000th airplane on August 17. No company in the world has built and sold as many private aircraft as Piper.

Landing at a rate of 8 airplanes a minute, or over 400 per hour, the Pipers, Cessnas, Beechcrafts and other types flew in 2,300 people to see Piper's newly-certificated 4-place low-wing tricycle Comanche in its first public showing, tour the factory that Cubs built and be Piper's guest for a free lunch.

There was advisory radio service on the 122.8 Unicom but landing instructions were not possible under such conditions. It was everybody for himself and those who watched with eyes and mouths agape had to marvel at

(Continued on page 56)

Crowds inspected Piper's new 4-place Comanche at its first public showing. But the Comanche was not flown, being on static display only.

Test Pilot Jay Myers, Howard Piper and J. W. Miller.

Mrs. Piper (right) with State Aeronautics Director John MacFarland and his wife. Photo at right shows Mr. Piper with NATA director Charlie Parker.

Sales Manager Miller presents Apache keys to Mr. Piper.

First slice of big cake went to Warren Finch, Piper employe for 28 years.

CURTISS-WRIGHT

The new CURTISS-WRIGHT *ZEPHYR* JET ENGINE

Air transportation must become quiet not only for its passengers, but for the communities in which it operates. The development of the Curtiss-Wright Zephyr Turbojet was based on the premises: 1 – that its technical excellence must provide a worthwhile performance improvement; 2 – that its advances must be sound in the final analysis from the economic point of view, and; 3 – that it must have a high order of public acceptance, not only from the viewpoint of the passenger, but the communities in which the airport is located and over which the airplane is operated. Moving airports further out of town with its attendant expense and the inconvenience of time lost in additional city to airport transportation is not the answer.

Curtiss-Wright Corporation has completed sufficient testing with the "Zephyr" to warrant the statement that the jet engine transport can be quiet and have a high order of public acceptance.

New Testing Procedure

The testing procedure for the Zephyr is new and novel. Curtiss-Wright discarded the standard jet engine test cell – a mass of concrete, steel, sound absorption, water silencing, etc. – and transferred the testing of the Zephyr to an open air test stand in which the engine is run with no silencing or sound absorption equipment under a specification calling for a minimum of noise, as well as a minimum of fuel consumption, just as the engine would run when it is in an airplane at the airport.

This outdoor testing equipment consists of two mobile vehicles; one on which the engine is mounted for tests; the other housing the control room and instrumentation required to measure thrust, fuel consumption and other equipment. Through the use of these mobile vehicles, the Zephyr is constantly being tested and demonstrated at airports and at off-highway locations to record and analyze its noise levels under idling, taxiing and full throttle conditions. This practical method of testing enables engineers and technicians to change new noise suppressing devices being developed and other equipment quickly and with ease.

The engine may be held at a given set of conditions so that technicians and observers can listen to, record and analyze noise levels for extended periods of time, and, while they are doing this, engine operating conditions can be changed instantly for purposes of demonstration. This method is preferable to listening to an airplane passing overhead where the noise is reduced or muffled, where the time for measuring and recording the volume of noise is limited and where it is difficult to fix the distances and conditions with any degree of accuracy.

Curtiss-Wright plans to demonstrate the mobile testing unit and the Zephyr engine at airports and other locations in the U.S. A request has been received to demonstrate the unit at a major airport in Europe.

Quieter Than Piston Engine

A jet engine transport can be quieter than a piston-engine airplane. For example, Curtiss-Wright has been able to minimize the compressor whine of the jet engine. This is the lesser in decibels of the two principal sources of noise from a jet engine, but, in a practical sense, its frequency and characteristics are something like a siren and more objectionable to some people than the jet noise which is of a lower frequency. Curtiss-Wright has also reduced the jet exhaust noise to acceptable levels because basically the engine is designed so that the mass of air passing through the jet to produce thrust is moving at a lower speed than that common to engines developed for military use at supersonic speeds. For the foreseeable future airlines will fly subsonically, and, therefore, there is no need for using supersonic speed jet engines, with their disadvantages, for jet airline operation.

Broad Research Program

Engine noise suppression, while the major element, is only one phase of the Curtiss-Wright program to lower noise levels for aircraft and airport communities. The mobile control room used in the Zephyr tests is lined with Curon, a new sound absorbing, multi-cellular, foamed material developed by Curtiss-Wright. This enables engineers to conduct concurrent tests of new methods of soundproofing aircraft passenger cabins. The same Curon can play an important role in absorbing ground noise at airports where jet and other aircraft are operated. For example, a curtain of Curon hung between runways and buildings will substantially reduce noise at the building. And Curon, in the form of wall tiles, ceiling and floor coverings, can further absorb sound and result in quieter air terminals and offices than ever before.

These are but a few of the technological developments of the Curtiss-Wright Corporation designed to make the introduction of jet airliners to the world airways quieter, more comfortable and economically sound. Others will follow.

This advertisement is published in response to the public interest in the Zephyr Jet engine reflected by numerous inquiries received from individuals and governmental authorities at every level.

CORPORATION **WOOD-RIDGE • NEW JERSEY**

General Aviation Facilities Requirements Survey

A report to the President's Special Assistant by the General Aviation Facilities Planning Group

Part 4-A Conclusion

General Aviation Operations in 1976

EDITOR'S NOTE: This concludes the full text of the official report by the General Aviation Facilities Planning Group. Member associations of this Group are Aeronautical Training Society, Aircraft Owners and Pilots Association, American Association of Airport Executives, Aviation Distributors and Manufacturers Association, Flying Physicians Association, National Association of State Aviation Officials, National Aviation Trades Association, National Business Aircraft Association, Flying Farmers, National Pilots Association and Utility Aircraft Council of Aircraft Industries Association. This series began in our May, 1957, issue. Reprints of the full text are available from FLIGHT MAGAZINE.

BEFORE continuing to a detailed breakdown of the operations of this new general aviation fleet by patterns of flying, it is necessary to review several factors which can condition these patterns of operation. The following factors have been considered and the assumptions made and used in the succeeding estimates are noted:

(1) Peak period of activity — seasonal, weekly and hourly — will remain essentially as they are today.

(2) The based location of aircraft by class will not change materially from that geographical pattern existing today.

(3) Requirements for pilot qualification and competence to fly various classes of aircraft under varying conditions will continue approximately as today.

(4) Instrument flying capability will tend to increase with increased pilot and passenger education as to its usefulness and with the provision of more instrument facilities in more locations and with simplified airborne instrument systems. This estimated increase is developed in a later section.

(5) Pilots will tend to fly at somewhat higher altitudes, with greater oxygen availablity and greater performance capacity on the part of their aircraft. However, this tendency will be minor in nature inasmuch as the primary altitude limitations appear to be posed by the relatively short length of most cross-country flight segments and the necessity or desirability of remaining below cloud formation on VFR flights. This altitude consideration will not be a major factor in general fleet activities, being applicable mainly to Class I aircraft and some few Class II aircraft.

(6) The ratios of local versus cross-country flying will stay essentially the same for each class of plane.

(7) The average distance of cross-country flights will remain about the same, with some increase in the case of larger Class I aircraft. This assumption simply accepts the fact that regardless of the performance characteristics of aircraft, the places visited determine the actual length of the flight. While the number of longer flights will increase, it is equally true that there will be a great increase in the lower distance brackets with the substantial growth of Class III aircraft usage, which is predominantly short-range usage. For forecast purposes, the present distribution by distance is accepted, although some tendencies, as yet statistically unsupportable, indicate that this distribution may shift slightly downward in years to come.

(8) The nature of aircraft ownership will generally follow the patterns already established for each class of aircraft and each purpose of usage.

(9) The correlation between aircraft operations in an area and the number of aircraft based in that area will continue to hold.

With these assumptions and with the ratios developed in Chapter II adjusted as appropriate to accommodate these assumptions, the operating pattern of the general aviation fleet of 1976 can be developed.

Approximately 588,000 *operations will be generated throughout the country on a peak day in* 1976.

588,000 Operations Per Peak Day

This estimated figure of 588,000 take-offs and landings to be generated by the general aviation fleet on a peak day of the week during the late summer seasonal peak in 1976 is significant as a measure of the total impact of general aviation operations but requires more detailed analysis to provide a basis for facilities planning.

The estimated operations within selected large hub areas are presented in Table 67.

Table 67

FORECAST OF TRAFFIC DENSITY AT SELECTED LARGE HUBS IN 1976

	Estimated Number of Operations on Peak Day of Typical Busy Week	
Hub Name	1956	1976
Los Angeles	**21,100**	**29,000**
New York	**12,900**	**19,500**
Chicago	**12,400**	**18,900**
Dallas	**4,700**	**7,500**
Miami	**4,200**	**6,500**
Seattle-Tacoma	**4,000**	**4,900**
Denver	**2,600**	**3,800**

—General Aviation Facilities Planning Group Survey

The operations forecast for the Chicago hub area in 1976 are developed to specifically picture the changes in flight patterns to be expected by that time in a large hub area. The Chicago hub operations will be generally typical of the problems to be met in all major hub areas and as such appear to form a useful base for system requirements. Similar analysis based on data available from the various surveys undertaken in this program can be developed if and as necessary. However, it is believed that the load pattern is far more significant to the planning of aviation facilities at this time than is

How are you solving your short haul problem?

You've noticed it in your company: so much of today's *executive travel* is not long range at all . . it's hop-skip-jump, by auto or taxi. You hop from one plant to another . . skip over to see an important nearby customer . . jump from office to airport. All of it may be within a hundred mile radius of your office. Yet, how this ground travel eats up your time!

Today, several hundred companies and individuals are using the Bell helicopter as their short haul specialist. By getting them across creeping traffic with portal-to-portal convenience, the Bell saves hours of needless time en route. Its "go anywhere, land anywhere" mobility . . with 1235-lb. load and 300-mile maximum range . . turns waste time into payoff time.

What kind of Bell suits *your* outlay? How much does one cost; how much to operate? If you'll drop us a note on your letterhead, we'll give you all the facts . . plus some pretty surprising reports from air fleet operators, chief pilots and company heads. We'll also be happy to tell you about Helicopter Charter Service and Bell's popular Lease-Purchase Plan. Why not learn more about the Bell now . . how it can fill the gap in your fleet to give you *total flexibility*. Address Dept. 3A, Bell Helicopter Corporation, Fort Worth, Texas.

No need to add to your crew . . your own air personnel can be trained by Bell to fly and service your helicopter. Pilots and mechanics convert quickly, expertly after Bell's thorough instruction.

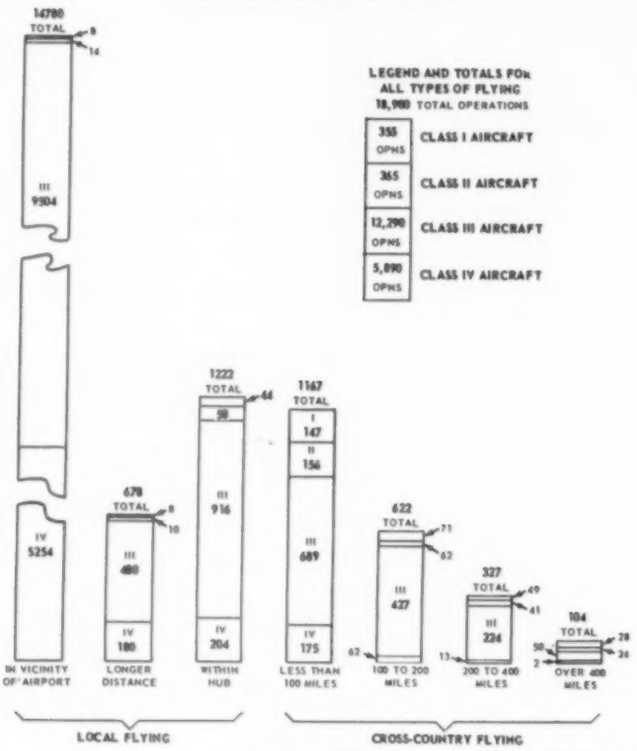
BELL Helicopter CORPORATION

FORT WORTH, TEXAS | SUBSIDIARY OF BELL AIRCRAFT CORPORATION

See Our Exhibit at the NBAA Convention

Table 68

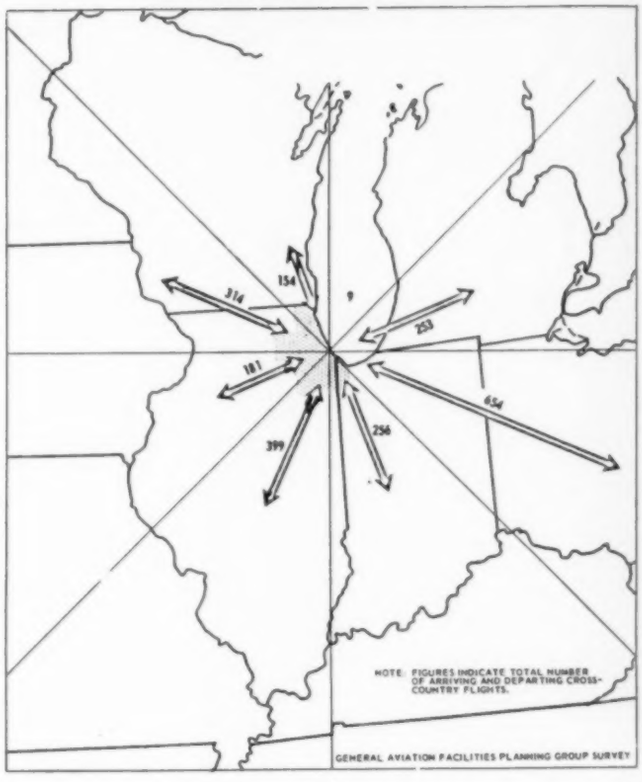
FORECAST WEEKEND PEAK-DAY OPERATIONS FOR THE CHICAGO HUB IN 1976



—General Aviation Facilities Planning Group Survey

Table 70

FORECAST CROSS-COUNTRY FLYING PATTERN, CHICAGO HUB, 1976, PEAK WEEKEND DAY



the detailed analysis forecast at 151 hubs.

Table 68 presents a summary analysis of the operations to be expected during a typical week-end peak day — the heaviest load expectancy in all classes of planes and flying — for the Chicago hub area in 1976.

Local flights will continue to be a large portion of total hub area flying. Notwithstanding the shifts in aircraft classes and class usage which substantially increase the proportion of cross-country flying, local flight operations will continue to provide a large portion of the activity within any hub area. Approximately 60 per cent of the aircraft in the air on a peak day in a typical hub will be on flights in which the aircraft will remain within the hub air space for the greater portion of its flight time.

During the peak hour, approximately 460 aircraft will be in the air.

Tables 69A, 69B, and 69C present the forecast of hourly variation in operations in the Chicago area for 1976. It will be seen that the hourly peak is still reached in midafternoon but that the greatly increased usage of business aircraft, flying as they do over a greater span of hours, brings our morning peak almost to the level

Table 69A

FORECAST OF DENSITY OF FLYING IN THE CHICAGO HUB AIRSPACE — 1976

(Local Flying)

Estimated Planes in the Air on a Peak Day

Time	Aircraft Class I	II	III	IV	Total
1 a. m.			3		3
2			5	1	6
3			7	1	8
4			9	1	10
5			12	2	14
6			14	2	16
7			16	4	20
8	1		25	25	51
9	2	3	85	40	130
10	3	9	130	60	202
11	2	23	130	55	210
Noon		9	60	30	99
1 p. m.		3	125	50	178
2			200	75	275
3			190	90	280
4			155	65	220
5			125	35	160
6			35	5	40
7	1		12	2	15
8	2		4	1	7
9	1			1	2
10					
11					
Midnight					
Total	12	47	1,342	545	1,946

Table 69B

FORECAST OF DENSITY OF FLYING IN THE CHICAGO HUB AIRSPACE — 1976

(Cross-Country Flying)

Estimated Planes in the Air on a Peak Day

Time	Aircraft Class I	II	III	IV	Total
1 a. m.					
2			2		2
3	1		2	1	4
4	1	1	3	1	6
5	2	2	4	1	9
6	4	3	6	2	15
7	7	6	10	3	26
8	10	9	18	6	43
9	15	18	65	18	116
10	40	31	90	27	188
11	23	26	135	35	219
Noon	21	17	50	23	111
1 p. m.	15	9	80	20	134
2	8	4	105	32	149
3	4	3	135	37	179
4	8	5	110	38	161
5	19	14	75	36	144
6	24	17	35	12	88
7	18	12	18	5	53
8	8	5	8	3	24
9	4	2	4	2	12
10	1	1	2	1	5
11			2	1	3
Midnight				1	1
Total	233	185	969	305	1,692

Table 69C

FORECAST OF DENSITY OF FLYING IN THE CHICAGO HUB AIRSPACE — 1976

(Total Local and Cross-Country Flying)

Estimated Planes in the Air on a Peak Day

Time	Aircraft Class I	II	III	IV	Total
1 a. m.			6		6
2			7	2	9
3	1		8	2	11
4	1	1	10	2	14
5	1	2	12	3	18
6	3	3	15	6	27
7	6	5	20	10	41
8	16	7	45	32	100
9	22	16	150	65	253
10	45	43	220	88	396
11	25	49	270	90	434
Noon	17	33	110	50	210
1 p. m.	11	9	220	80	320
2	6	5	295	94	400
3	4	3	325	125	457
4	9	5	270	95	379
5	19	14	195	60	268
6	24	16	65	13	118
7	16	12	30	10	68
8	11	5	15	5	36
9	4	2	10	4	20
10	2	1	7	3	13
11	1		5	2	8
Midnight			3	2	5
Total	244	231	2,293	843	3,611

IS YOUR JET ENGINE
RPM MEASUREMENT
ACCURATE AND SAFE?

TAKCAL®

READS JET ENGINE SPEED to GUARANTEED ACCURACY of 10 RPM in 10,000 RPM (±0.1%)

The inter-relation of RPM to efficiency and thrust in jet engines is fundamental. Proper adjustments for maximum thrust, maximum engine life and maximum safety of operation can be made only upon accuracy of instrumentation. The TAKCAL tests to guarantee that accuracy.

The new B & H TAKCAL incorporates a refinement of the frequency meter principle. It operates in the low (0 to 1000 cps) range, reading the frequency of the tachometer generator on a scale calibrated in percent RPM corresponding to the engine's RPM. It reads engine speed while the engine is running with a guaranteed accuracy of ±0.1% in the range of 0 to 110% RPM. Additionally, the TAKCAL circuit can be used to trouble-shoot and isolate errors in the aircraft tachometer system, with the circuit and tachometer paralleled to obtain simultaneous reading.

The TAKCAL's component parts are identical with those used in the J-Model JETCAL Analyzer. They are here assembled as a separate unit tester and for use with all earlier models of the JETCAL Tester.

The TAKCAL operates accurately in all ambient temperatures from −40°F. to 140°F. Low in cost for an instrument of such extreme accuracy, it is adaptable to application in many other fields.

For full information write or wire . . .

CHECKS TACHOMETER "SYSTEM" ACCURACY.
ADAPTS TO ANY FREQUENCY PROBLEM!

Explosion-proof TAKCAL for special applications. Measures 200 to 7500 RPM, direct reading, with ±0.1% accuracy.

B & H makes the *JETCAL*® Analyzer and *TEMPCAL*® Tester

B & H INSTRUMENT CO., INC.

3479 West Vickery Blvd. • Fort Worth 7, Texas

Sales-Engineering Offices:

VALLEY STREAM, L. I.: 108 So. Franklin, LO 1-9220 • DAYTON, OHIO: 209 Commercial Bldg., MI 4563 • COMPTON, CAL.: 105 N. Bradfield St., NE 6-8970

of the afternoon peak and provides a high rate of activity from about 9 a. m. to 5 p. m.

The potential impact upon this extension of a high rate peak period to more hours in the day would appear to emphasize the air traffic problem to an even greater degree since the peak load can be less easily shifted — delays in departure or acceptance of arrivals — particularly in the case of the business fleet which has certain schedules to maintain.

Approximately 2,200 *cross-country flights are forecast in and out of the Chicago hub for a peak day in* 1976. Of these total peak day operations, approximately 2,200 are associated with cross-country flights. An analysis of these flights as to distance and description provides data upon the airspace demands to be generated immediately outside a large hub area.

As pointed out in an earlier discussion, this type of analysis is peculiar to each hub area and can be developed as necessary for each based upon existing data.

Table 70 is a map which portrays these data and Table 71 presents these data by aircraft class and distance of flight.

Increased IFR Demands

The general aviation IFR peak demand should increase substantially by 1976. It will, however, still be on a very small percentage of the VFR demand. A major portion of this increased IFR demand from the general aviation fleet is based statistically directly upon the greater number of Class I and II aircraft being operated for somewhat longer hours on business purposes and piloted by professionals with complete IFR competence. The anticipated substantial increase in the number of these planes and in the total flying hours by these aircraft by the 1976 period indicates a three fold to fourfold increase in IFR demand even if the incidence of IFR operation for each aircraft remains the same as at present.

Table 71

FORECAST OF THE DIRECTION OF CROSS-COUNTRY FLIGHTS ON A PEAK DAY — CHICAGO HUB — 1976

Number of Flights on a Peak Day of a Typical Busy Week

Octant	Miles	Aircraft Class I	II	III	IV	Total
NNE	Under 100	0	0	0	0	0
	100-200	0	0	5	0	5
	Over 200	4	0	0	0	4
ENE	Under 100	18	0	41	7	66
	100-200	17	0	56	1	74
	Over 200	23	55	33	2	113
ESE	Under 100	123	156	268	49	596
	100-200	0	0	0	4	4
	Over 200	9	0	33	2	54
SSE	Under 100	0	0	48	23	71
	100-200	34	49	87	6	176
	Over 200	0	0	7	2	9
SSW	Under 100	0	0	89	21	110
	100-200	7	13	141	20	181
	Over 200	15	10	77	6	108
WSW	Under 100	0	0	48	4	52
	100-200	7	0	43	12	62
	Over 200	11	0	54	2	67
WNW	Under 100	6	0	141	44	191
	100-200	7	0	49	2	55
NNW	Under 100	0	0	54	27	81
	100-200	0	0	46	6	52
	Over 200	0	0	21	0	21

—General Aviation Facilities Planning Group Survey

In addition, new developments and new installations supporting IFR flight operations will tend to increase the incidence of IFR operation across the total fleet. This will not only mean a small increase in IFR flying for planes now doing the major share of IFR flying but should also bring new planes into the IFR operating category from lower performance aircraft. Purely for purposes of estimating, the magnitude of this general increase is put at 1½ to 2 times the present incidence of IFR operation by aircraft in the present fleet.

With the use of these factors, it is evident that an increase in IFR operations of between five to eight times the present IFR peak load will be generated by the general aviation fleet for 1976.

This peak load for 1976 by class of aircraft for selected hubs is shown in Table 72.

Table 72

ESTIMATED PEAK HOURS IFR LOADS AT SELECTED HUBS IN 1976

Hub Name	1976 Range of IFR Peak Hour Operations
New York	40 - 64
Chicago	25 - 40
Detroit	20 - 32
Washington, D. C.	20 - 32
Houston	20 - 32

—General Aviation Facilities Planning Group Survey

THE prime aim of this report has been to develop and present valid quantitative estimates of general aviation activity some 20 years hence on which a program for aviation facilities may be built. The magnitude of these requirements speaks for itself. Rising out of this mass of individual trends are certain major conclusions which will condition the pattern of development of general aviation flying for many years to come and which, in summary, will generate the greatest impact upon facilities planning and operation.

It has been estimated that the hours flown by general aviation aircraft will double over the next 20 years. However, this is hardly a measure of the impact of general aviation operations upon our facilities — which impact will be far greater. This conclusion rests upon the simple fact that these flying hours will be generated by a general aviation fleet whose numbers will dominate the aircraft population of the country. Furthermore, the flying habits of the pilots and users of these aircraft will force operational peak loads far beyond those generated by scheduled air transport or military flying — and it is these peak loads that must be accommodated by our facilities. It would appear that these general aviation peaks may well become the major consideration in our facilities planning.

The use of aircraft for business purposes will continue to increase dramatically — and, once again, this will bring an impact far more than that indicated by the simple increase in hours flown and numbers of aircraft. These business planes will be increasingly in the high performance categories and the accommodation of their performance characteristics by our aviation facilities will once again pose a facilities requirement beyond that indicated by a simple arithmetical expansion of the general aviation fleet and annual flying hours.

The incidence of IFR operation will step up dramatically. Most of this increase will come quite apart from any results of IFR flight and flight control simplification. Even under the existing pattern, it seems readily apparent that the large increase in business flying in higher performance aircraft by highly qualified pilots will multiply our instrument flight facilities requirements by a factor of perhaps eight times. This indeed is a matter that goes to the heart of our air traffic control planning.

It likewise seems apparent that the problems in the hub areas will continue to be a growing source of concern and that aircraft operations in the hub areas — dominated as they are and will be by general aviation aircraft — must receive most urgent attention during the early days of our facilities program installation.

These broad conclusions underscore the requirements posed by general aviation upon our country's aviation facilities, which requirements go far beyond those apparent through mere multiplication of flight hours and fleet size. General aviation will continue to contribute ever more greatly to our country's economic advancement and to the lives and working habits of individuals. The accommodation of requirements of the large general aviation activity presents a challenge to the developers of our aviation facilities program which must be met if the near and long-range future benefits to be generated by this general aviation activity are to be realized to their fullest potential.

SUPER VENTURA

(Continued from page 27)

ance and flight characteristics "have come up to or exceeded expectations." His executives were "sold" when they made a trip from New York to Miami and returned home the same day after a business meeting in Miami—a trip that would have been virtually impossible with their previous executive airplane. Another owner points out that they use a ranch landing strip 4,500 feet long with 3,200 feet of pavement under all wind conditions.

With such outstanding performance, then, price has not been too much of a factor in selling the Howard Super. Sales resistance has come from other considerations. First of all the general reputation of the old Ventura had to be overcome. This has been accomplished by a completely re-engineered and re-manufactured airplane, and practical demonstration of every item changed. The electrical system is to airline specifications with 80,000 feet of new wiring. The hydraulic system is so designed as to provide three ways of extending the landing gear, three sources of brake operation, a means of isolating the brakes from the rest of the hydraulic system, complete one-man operation of the emergency systems. The fuel system consists of a dual selector that permits selection of all fuel on board to either engine without the use of cross-feed. In case of fuel pressure drop on any tank an emergency system goes in automatically. Perhaps one of the greatest single changes in the airplane is the spring tab boost system on the rudder and elevator controls. The standard Ventura had to have a minimum single-engine speed with full power of 215 mph. to meet .04 B category control pressure requirements. The Super requires only 100 mph. Aerodynamic clean-up resulted in the Super's capability of cruising on one engine faster than a DC-3 cruises on two. Bad stall characteristics were eliminated by square wing tips and the fuselage extension.

Other items that help sell the Super include the bird-proof windshield which also provides a 100 per cent increase in pilot visibility range; fuel lines installed with no fire-hazard con-

D. U. Howard (right) with Copano Oil Pilot Hub Gayle.

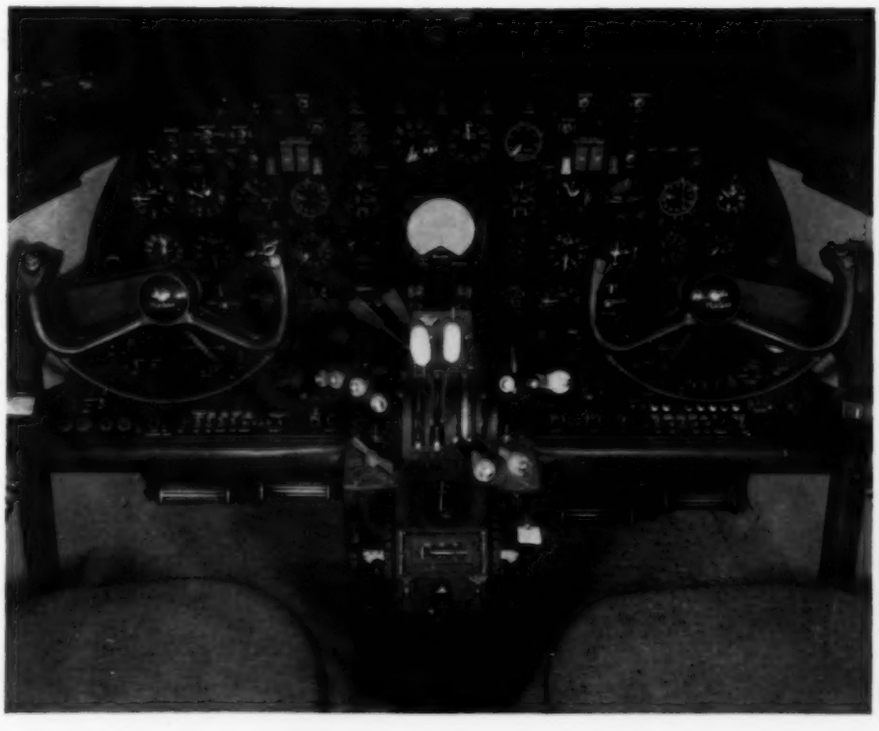
nections in the fuselage; wing butts vapor sealed to prevent exhaust or gas fumes from entering the fuselage; engine accessory sections completely shrouded in stainless steel for fire protection; the dual flight instruments arranged so that one system is vacuum driven and the other electrically driven; finally, re-engineering has produced an airplane that's practically impossible to load outside the center of gravity limitations regardless of fuel or passenger loading; and there are no landing weight limitations on the Super. The more a shy or skeptical prospect digs into the changes they have made the closer he comes to writing the deposit check. So sales resistance number one is beginning to dissipate with increased sales.

Another item of prospective customer concern is the fact that the airplane is not licensed under Part .04-B of the Civil Air Regulations. But here again sales resistance melts when it is understood the airplane is designed especially for executive transportation. However most airplane buyers today fully realize and appreciate the tremendous amount of money required to get CAA certification under .04-B and the consequent effect on the price of the airplane not intended for airline use.

The economic factor also comes into play when a prospect complains about paying out so much for an un-pressurized airplane. Here again, says Howard, you get what you pay for and if you want pressurization you have to jump into the million dollar price tag area. Besides, airborne radar is now so effective that it's possible to fly around the rough stuff and not necessary to climb over it. Modern oxygen equipment provides 4 hours duration for 10 people. With an airplane that will go as high as 35,000 feet and cruise at better than 300 miles an hour the terrific cost of pressurization isn't justified, according to Howard. More and more customers agree.

The Howard sales people, including Dee himself, have spent many an hour interviewing the captains of American industry. These salesmen are convinced there is a limit to what American corporate enterprise will pay for an airplane. "Too many of them," says Dee Howard, "have told me they

(Continued on page 57)



Super Venturas have generous panel space and weight allowable for completely dual airline-type equipment, the cockpit featuring many custom innovations for operational efficiency. Custom soundproofing gives the Super Ventura one of the quietest corporate airplane cabins flying.

SOMEDAY, S

NEWEST VERSION of the automatic direction finder used in more planes (10,000,000 hours of flying time!) than all competitive units combined. LEAR ADF-12E is easiest to operate; lightest in weight; by far the lowest-priced. Can furnish power and modulation for a LEAR RT-10 VHF transmitter.

LEAR ADF-12E

MAY EQUAL THESE

LEAR LTR-800

FIRST AND ONLY 800-channel VHF transceiver. LEAR LTR-800 weighs only 26 pounds; occupies only a ½ ATR package; costs no more than sets offering a fraction as many frequencies. Provision for VOR, VAR, and ILS localizer. Your airplane will be obsolete before this will.

LEAR LVTR-36

THE INDUSTRY'S STANDARD transceiver for medium size business aircraft. LEAR LVTR-36 includes automatic channel selector. Clear, sharp transmission and reception on 36 channels.

BY THEN

HEADING, BANK ANGLE, AND PITCH all presented *naturally* on a single dial. LEAR NAFLI (NAtural FLight Instrument) system offers magnetic slaving and latitude compensations, virtually combining the LC-1 Compass with the most readable attitude indicator made.

LEAR NAFLI

LATEST MODEL of the light-weight communication and navigation package which has become practically standard equipment on light aircraft. LEAR LTRA-6T system includes VHF receiver with "Tone Tuning" and OmniMeter®; LF receiver; 12-channel VHF transmitter; marker beacon receiver.

LEAR LTRA-6T

MAKE STILL

For full information see your

Y, SOMEONE

LEAR ADF-100

THE WORLD'S MOST ADVANCED ADF is the only *fully-transistorized* navigation system. LEAR ADF-100 is the lightest, most compact airline-calibre direction finder; uses only one-tenth the power other ADF's require.

LEAR L-2 AUTOPILOT

THE PRIVATE FLIER'S ONLY full-fledged three-axis flight-control system. LEAR L-2 Autopilot offers automatic ILS and automatic altitude control. The only thoroughly proven automatic pilot for all light and medium planes.

E INSTRUMENTS...

LEAR L-5 AUTOPILOT

BY FAR THE LIGHTEST AUTOPILOT system for larger high-performance aircraft (weighs 60 to 90 pounds less than others). LEAR L-5 Autopilot System also costs less, yet includes (all automatic) trim, safety cut-out, altitude control, ILS.

LEAR VORTRAN

THE ONLY OMNIRANGE INDICATOR with built-in omni converter, fully transistorized. LEAR VORTRAN adapts to any VHF receiver covering omni frequencies. Just tune to the desired station, adjust the course selector, and fly the needle!

N LEAR WILL

LIGHTEST GLIDE SLOPE RECEIVER on the market (five pounds). LEAR LGSR-1 features built-in transistorized high-voltage power supply; has full 20-channel coverage; provides power for autopilot ILS system and dual ILS indicators; fits a short ¼ ATR package; meets ARINC requirements.

LEAR LGSR-1

FINEST GYRO-STABILIZED latitude-compensating compass available. LEAR LC-1 is reliable and accurate even in high latitudes and magnetic storms. Navy's choice (designated Type MA-1) over all similar directional systems.

LEAR LC-1 COMPASS

L BETTER ONES!

your LEAR *distributor or write* LEAR, *Incorporated*, LEARCAL *Division, 3171 South Bundy Drive, Santa Monica, California.*

LC-43

COMPANY AIR FLEET

(Continued from page 25)

erage hourly operating expense is around $63 per Beechcraft, excluding crew salaries. Significantly, this amount is nearly $7 an hour less than factory-estimated Super 18 operating costs.

"Flying over the same routes at the same power settings, generally 61 per cent, each type burns about 50 gallons an hour," said Arnspiger. "But under these identical operating conditions the Super 18 is almost 20 miles an hour faster."

All of which means that based on a rate of 600 hours and comparative economical cruise speeds, one Super 18 can cover 12,000 extra miles a year without costing another dime. Arnspiger figures that to gain this much additional mileage with a Model D18S would cost at least $4,500 annually in operating expense alone.

Sunray Mid-Continent's aviation department leases hangar, office and shop facilities from Spartan Aircraft Company on Tulsa Municipal Airport. Spartan furnishes all ground handling, radio and major overhaul services, but Sunray Mid-Continent technicians perform all other aircraft maintenance on the entire fleet. As chief pilot and aviation department manager, Arnspiger heads a force of nine pilots and four mechanics.

His right arm is genial W. C. (Bill) Schulle, assistant chief pilot and a former B-29 instructor. In addition, there are four senior pilots — A. H. Noe, J. M. Smith, E. M. Murphy and Don Wolfe, plus four second pilots — H. E. Kehr, D. H. Dickinson, A. A. Deverick and S. P. Wallis.

"We have no co-pilots, just seniors and seconds," said Arnspiger. "Each senior pilot is assigned a Super 18, while second pilots rotate on all equipment." The chief pilot and his assistant take turns on the Lodestar, which is usually reserved for long trips or for flights having more than

Sunray's Arnspiger says his Super 18 Beechcrafts cost no more to operate than the slower D18S models they replaced—but four Super's fly 48,000 more miles in a 600-hr. year than four D's. Cost averages $63 hourly, excluding crew pay.

five passengers. (The Super 18's have a standard five-seat arrangement in the passenger compartment.)

Each Sunray Mid-Continent plane is manned by two pilots, however short the trip. Senior and second pilots share flying chores equally, alternating between left and right seats. One will fly outbound, the other will fly home. This policy helps stimulate morale, keeps pilot proficiency at a high level. Moreover, on deadhead trips the time is utilized by hood flying and instrument approach practice.

Responsibility for keeping planes in tip-top order falls to R. L. (Bob) Anderson, the company's chief aircraft mechanic. Working with Anderson are C. A. Hudson, E. A. Anderson and R. E. Mong. All hold CAA aircraft and engine mechanic licenses and each has between 12 and 15 years of experience in aircraft mechanical work.

Arnspiger himself has been flying since 1927, first as a hobby and later as a profession. In 1940 he became chief pilot for Spartan, supervising the training of military flight instructors. Next he joined Douglas Aircraft Corporation's Tulsa division as a production test pilot, flying everything from Dauntless divebombers and A-26 Invaders to B-24's, C-54's and modified B-25's and B-17's.

"With World War II drawing to a close, I decided to enter business aviation which I felt offered the best opportunities for the future," Arnspiger recalled. "My boss at Douglas urged me to stay, but I was getting tired of holding my breath every time I took off on a test hop." Arnspiger sought more than just a pilot's job. He wanted to set up an aviation department with some company that needed an airplane, yet didn't own one. After a thorough analysis of several firms he selected Sunray, presented irrefutable evidence proving the flexibility, utility and convenience of company-owned aircraft, and went to work. The association has been mutually beneficial ever since. Probably no corporate flying official is more dedicated to his profession. As far as his department is concerned, there's absolutely no margin for error. Most other departments in the company, he once told an executive, can usually correct mistakes with a pencil eraser.

In August of this year, Sunray Mid-Continent marked 12 consecutive years of flight operation with a perfect safety record. Never in nearly 3,000,000 miles of flying has a Sunray Mid-Continent plane been scratched nor a passenger injured.

Arnspiger administrates his aviation department like a business, runs flight operations like a science. Routine trips are scheduled a week in advance by a dispatcher in the company's downtown office building. Crews receive their assignments every Friday. Due to the complexities of the industry,

Sunray mechanics (left) and pilots (below) at work. Company has nine pilots and four mechanics.

flights frequently come up on moment's notice. In all cases, however, the first plane in is always the next plane out.

Copies of trip schedules and passenger manifests go direct to the auditing department. Then at the end of each month the cost of operation is prorated among departments charged with originating flights. In this way every department knows exactly how much it is spending on company air transportation.

Super 18 loads will average three to four passengers, although many flights will have five aboard. Arnspiger has set two passengers as the minimum for profitable operation. Recently a company executive asked if it would pay to deadhead a plane all the way to Philadelphia to pick up four employes. Arnspiger replied that this would be the same as a round-trip for two people. A Super 18 was promptly sent.

Not one to be bogged down by paper work, Arnspiger recognizes the importance of maintaining accurate records on every phase of his operation. He keeps a daily accounting of flights, passengers and maintenance work and can tell you every last detail of any particular trip or of anything that might have been done to an airplane on any given day as far back as 1945 when operations started.

His monthly aircraft maintenance record, for example, shows by days the daily flight time, cumulative total, and time since last check at 25-hour, 50-hour, 75-hour and 100-hour intervals. His progressive maintenance program assures that planes are never tied up and out of service as a result of 100-hour inspections. In fact, Sunray Mid-Continent's check list on the four periodic aircraft and engine inspections are so complete that they have been adopted by many other companies operating twin-engine equipment.

There is also a daily airplane flight report which tells at a glance all the history of a trip, which department should be charged for it—and how much. Before take-off, senior pilots prepare a log containing check points en route, headings, winds, speeds, course, altitudes, communications frequencies, fuel management, times, distances and other necessary information.

"By working this out in advance, the pilot has a ready reference for navigation and cruise control on a single form, everything he needs to know except approach data," Arnspiger said. "In event of fuel gauge failure, for instance, the pilot can quickly compute his unused gas by checking the log."

A monthly airplane report gives the hours flown, miles, number of flights, average speed, gas and oil consumption, storage fees, office and shop rental, Spartan's billing for services, and miscellaneous items accrued during the period.

As a result, Arnspiger knows his cost breakdown to the penny. Take the hourly cost schedule for a Super 18. About $9 goes to fixed operation —insurance, hangar and other rent. Variable operation expense—including materials and supplies, gas, oil and lubricants, outside services and fees, and miscellaneous, will average $25. Depreciation, spread over five years, runs around $29. Total cost per hour: $63.

Added to this are pilots' salaries and burden amounting to $41. Thus, direct and indirect cost of operating a Sunray Mid-Continent Super 18 is approximately $104 an hour.

Like all good fleet operators, Arnspiger set his standards high in selecting equipment, choosing personnel, and planning his *modus operandi*. He picked Super 18's because after an evaluation of various twin-engine types he found Beechcrafts to be best suited for his company's purpose from the standpoint of operating economy, speed, comfort, safety and dependability—plus quality of the product.

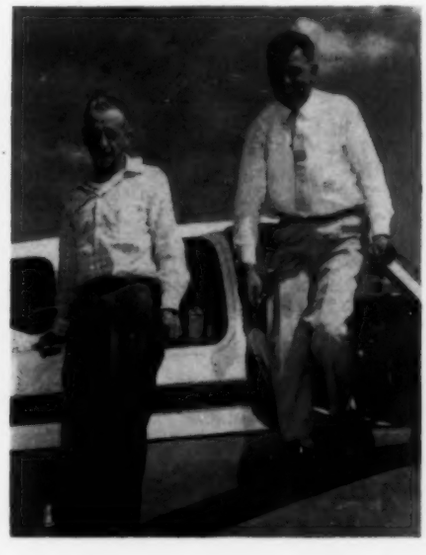
He feels too many operators sacrifice payload by installing just about every kind of radio and navigational device in the book. He limits this type of equipment to what he considers essential for the mission. Each Super 18 has a Lear LVTR-36 VHF transceiver, ARC 15D dual omni, ARC T-21 standby VHF transmitter, ARC R-11 A range receiver and Flite-Tronic MB-3 marker beacon receiver. In addition, three Supers are equipped with Lear ADF-R14 automatic direction finder. The OMR plane, on the other hand, has an ARC type 21 ADF and a Wilcox 360 channel transmitter. All four installations include an isolation amplifier for separate receiver selection.

The planes also have factory-installed de-icing and propeller anti-icing equipment, windshield wipers, airline type clearance lights, custom exterior paint (gray with green trim), super soundproofing, cabin tables, thermos bottles, refreshment bars, Grimes rotating beacons, extra batteries, deluxe airline type instrument panels, and Grimes instrument lights.

Three Supers are equipped with 80-gallon nose tanks giving them a total

BEECH AIRCRAFT'S 300th SUPER 18 TRANSPORT went last month to Krispy Kreme Doughnut Corp., Winston-Salem, N. C. In the picture, left to right, are Vernon C. Rudolph, Krispy Kreme president; Bob Northington of Piedmont Aviation, who sold it, and Krispy Kreme Pilot Rex Beamer. Super 18 was introduced in 1954. —(Beech Photo.)

BONANZA'S 8-HOUR RANGE enabled H. P. Waechter (left) and Chuck Amos to fly 1,226 mi. from Fresno to Kingman, Kas., on 57 gals. of fuel.



These Aircraft Engine Experts are AT YOUR SERVICE

Continental's Factory Re-manufacture plan, successor to the periodic overhaul, backs you with the specialized skills of the men who know your engine best. With your factory re-manufactured Continental, you get new engine warranty—new log book with zero hours—at a modest, pre-determined price. Most important of all, you're back in the air with an absolute minimum of costly down time.

•

WHY NOT WRITE NOW FOR THE INFORMATION THAT CAN SAVE YOU TIME AND MONEY WHEN OVERHAUL TIME ROLLS ROUND AGAIN?

•

WHEN CHOOSING AN AIRPLANE, FOR PERSONAL OR BUSINESS USE, MAKE SURE IT HAS CONTINENTAL ENGINE . . . PILOTS' UNDISPUTED FIRST CHOICE.

Continental Motors Corporation

AIRCRAFT ENGINE DIVISION
MUSKEGON, MICHIGAN

fuel capacity of 275 gallons each, which provides a cruising range of about 1,300 miles with 45 minutes reserve. Instead of the nose tank, however, the OMR Super 18 has auxiliary wing tanks which give it 318 gallons and a range up to 1,626 miles.

Arnspiger has a simple formula for safe, efficient fleet operation—good equipment, sound maintenance program, competent flight and ground personnel, and standardized operating procedures.

To qualify as a Sunray Mid-Continent pilot, the applicant must have a minimum of 4,000 hours, of which at least 1,000 were flown as first pilot on comparable multi-engine aircraft. He must hold commercial, instrument and multi-engine ratings and must have logged 150 hours or more under actual instrument flight conditions.

Sunray Mid-Continent pilots have an average of 6,000 hours in the air. All are married and have families. Their average age is 36. Arnspiger, himself a family man with a 16-year-old daughter, prefers to hire married men over 30. "They have something to work for, stability, and the mature judgment and experience so vital to this business."

"During vacations, Bill Schulle flies two weeks with each pilot to check proficiency," said Arnspiger. "If the man's technique is not quite up to par, then it's time for some additional work." Regular instrument checks are made every six months.

A CAA flight plan is filed for every trip. All flying is conducted as if conditions were IFR, no matter what the weather. Position reports en route enable the company to contact a flight through airways traffic control in the event it is necessary to divert the plane to a new destination.

Arnspiger insists that pilots keep current in all phases of flying, make thorough studies of en route weather, and know their own personal limitations as well as the limitations of their aircraft. And he impresses upon them the importance of doing everything possible for the comfort and convenience of passengers. Each pilot takes a personal pride in his equipment. At destination, crews service their aircraft immediately after landing so that the plane will be ready for a prompt departure.

Sunray Mid-Continent air service is saving hours of valuable time in a busy day. When passengers arrive at destination, they are rested and relaxed, ready to start the day's work—a conference about refining and pipe line activities in Texas, a meeting with project engineers, and inspection of a new installation, or a session on ex-

ploration which may mean a new oil field.

To accomplish such a full schedule, punctual preparation is as important as the actual flying, in Arnspiger's opinion. A 6 a. m. take-off means just that. It also means that pilots and ground crew must be up at 4:30 to get the plane ready, check weather and plan the flight. Early-dawn departures are so common that one Sunray Mid-Continent official who travels constantly was moved to quip, "If this keeps up we had better change the company name to Sunrise!"

Get there, get the job done, and get home. That in a nutshell is the philosophy of Sunray Mid-Continent's fleet operation. It's a philosophy that has paid handsome dividends over the past decade.

HELICOPTER AIR LIFT

(Continued from page 22)

area, as congested as surface traffic is, has many wide-open aerial avenues of safe and practical approach. The lake front itself reaches into the heart of the city. This is the greatest railroad center in the world and its railway lines and yards provide ideal flyways for helicopters. Rivers, too, are excellent for the choppers to follow.

Thus aerial navigation by helicopter is greatly accommodated within Chicago. Landing spots are something else again, but here, too, there is encouragement in Chicago for the greater utilization of helicopters. Perhaps the most widely-publicized downtown heliport is the 40 by 40-ft. platform atop the Hilton Hotel. But there are others, such as on the 19th floor of the Merchandise Mart, the 2nd floor of the International Ampitheater and the 9th floor of the Edgewater Beach Hotel. A helicopter may be landed at any point where a suitable area exists along CAA-approved routes, provided the property owner's permission to land is obtained. For frequent operations, heliport designations must be obtained and in this realm Helicopter Air Lift, as a service to its customers, surveys proposed sites and processes all necessary papers. Its helicopters currently operate into some 60 industrial plant and office heliports in Chicago.

One of the best features of the Bell helicopter is that roofs designed for normal snow loads, as in the Chicago area, will readily support the Bell's lightweight without additional structure. Helicopter landings on factory roofs and in plant yards are an everyday sight in Chicago.

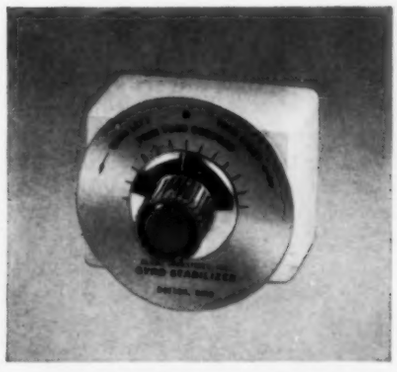
Even with all these assets, however, the many advantages of helicopter transit in the city must be sold —

start now to build your autopilot

Tri-Pacer and Cessna owners: Start now to build an autopilot to suit your needs . . . one that will hold your magnetic heading on long cross-country flights and lets you relax. Begin with a Globe Gyro Stabilizer. Quick facts: Provides short-term heading sense, stable turns at the touch of a knob, and the safety of spiral stability.

It lets you think, observe, navigate, and tune radios. Hundreds of business pilots have their G/S already. $675. When you're ready, add a magnetic Heading/Lock kit. Quick facts: it automatically holds the magnetic heading of your choice, repeatable to 2° or less hour after hour! Optional equipment can include a remote compass indicator. Heading/Lock conversion kit costs $725.

GLOBE



Or you can buy the whole ball of wax in a Globe Mark II Autopilot for $1350. You are guarded against obsolescence with a Globe because you can add new developments (more building blocks to come) to what you already have. Isn't this the sensible way to buy an autopilot?
Please send the coupon for full information ▼

Special Products Division
Globe Industries, Inc.
125 Sunrise Place, Dayton 7, Ohio

Please send me details on how to "build" a Globe autopilot.

Name _____

Address _____

City _____ State _____

I own a _____

most industries not using the service need to be convinced that Helicopter Air Lift can prove worthwhile. This is not as easy as it seems, even for a salesman of Conners' demonstrated abilities. "My selling never ends," he says, pointing to a busy schedule of calls on new prospects, public relations assignments and regular illustrated talks before civic clubs and other gatherings.

Biggest selling point is the helicopter's ability to operate in congested areas completely free from any earthly ties such as suburban airport facilities, street-corner traffic lights and even freeway auto traffic congestion. The chopper is truly a door-to-door delivery vehicle, which can speed along at 90 to 100 mph. as easily as it can loaf at a walking pace, hover in air at a dead stop or even back up. This freedom and mobility also have given it a remarkable safety record—for 8 years helicopters have averaged over 1,400 miles of transportation daily in Chicago but there has never been a helicopter passenger fatality in this busy area.

Balance this against the growing difficulties and hazards of surface transportation in Chicago and the value of Helicopter Air Lift takes on glowing significance to anyone faced with the necessity of rapid transit. Cross-town surface trips which take hours to complete are flown in minutes. So are trips from the city center out to suburban plants or customers, and return, as are trips to and from outlying airports for transcontinental air service. The need for helicopter advantages such as these is an increasing one due to numerous elements: (1) street traffic is multiplying rapidly to restrict surface travel more and more; (2) business firms and industries are becoming more dispersed and scattered, with departments or divisions within a company being located at widely-separated points (thus creating even greater problems in moving management, skilled personnel, communications, supplies and essentials from one company unit to another); (3) production stoppages can be prevented or minimized by the rapid transfer of needed replacement parts or supplies, and (4) as competition stiffens, customer relations become even more valuable and the helicopter's "magic carpet" door-to-door treatment is a priceless asset in VIP handling.

For management mobility, consider the helicopter's value to Marshall Field, for example. This firm's specialists use Helicopter Air Lift to visit suburban shopping centers and installations in a fraction of the time surface travel would require, so that management accomplishes more in a given period of time and supervises operations more thoroughly than ever. Another subscriber, a major radio and TV manufacturer, prevented loss of three shifts on a long and highly-complex production line when two engineers, a packet of blueprints and several small electronic switches were airlifted from a downtown office into a west-side factory. Within less than an hour they were back downtown, saving the manufacturer and his workers an economic loss which would have run into many thousands of dollars.

Many Helicopter Air Lift subscribers have turned the service into a truly promotional asset. They issue "Copter Club" cards for customers or suppliers and use photos which are sent back to the rider's home company, which is also duly impressed. A high-powered merchandising chain used a blanket charter of copter service for politicians during the Democratic National convention. Operating out of Chicago's downtown lakefront airport, Meigs Field, the choppers carried 1,200 persons to and from the Stockyards Ampitheater. Franklin Supply did the same thing for the American Petroleum Institute's meeting, which attracted thousands of oil men to town. HAL flew over 2,000 passengers for Franklin from airports

WORLD'S FIRST ROBOT HELICOPTER has been flown by Kaman Aircraft Corp. at Bloomfield, Conn. Operation is said to be so simple that it does not require pilot-trained personnel—Kaman's senior project engineer, R. C. Mack, who has never flown a copter or any other aircraft, flew the robot on its first hop by remote radio controls. Rope shown is for tethering during tests.

to the Conrad Hilton and Edgewater Beach heliports and from the hotels to nearby oil refinery and oil laboratory sites that were hours by auto but minutes away when flying as a guest of Franklin Supply. More often than not, the customer senses for himself that this Helicopter Air Lift business is a smart promotion. His business naturally goes to the host with the most on the ball when the occasion arises.

Hal Conners, the Helicopter Air Lift salesman, can reel off examples of his services' usefulness by the hour without repeating himself. But the biggest selling job he ever did was to set up the operation in the beginning. This operation was performed by Conners in Korea on Brig. Gen. John P. (Jock) Henebry, then commanding the 315th Air Division (troop carrier) at Fukuoka, Japan. Conners was a lieutenant colonel, Henebry's chief for operations. Both were reservists on active duty following a peacetime interlude between V-J Day in 1945 and the police action in Korea. As they watched the choppers drifting down into the deep valleys and the main line of resistance in 1951-52, when helicopters saved 22,000 lives and performed countless feats of military value, Conners conceived the idea for HAL. "That's the kind of transportation that would do a peacetime job around cities — where buildings form canyons just as steep as these and where auto traffic on the ground is already impossibly slow," he told Henebry.

Henebry was already heavily committed to civil flying, heading up the Skymotive, Inc. operations at Chicago's O'Hare International Airport. Skymotive was conceived and geared to provide service to corporate and business flying, so it was the natural thing for Henebry to listen to his operations officer night after night in various billets, clubs and forward air positions. It wasn't difficult for him to realize that Conners really had something in this copter lift for business. But because Henebry would have his hands full with Skymotive, Conners would have to develop the chopper deal solo. This took three years of getting the ball to rolling with Helicopter Air Lift starting out as a division of Skymotive.

As some 40 leading Chicago industries will gladly confirm, Jock Henebry was never "righter" than when he gave the go-ahead to Helicopter Air Lift. Conners has made it into the world's most modern radio-dispatched taxi company. The man with a plan and a lot of hard work has given a new dimension to business flying and industrial aviation.

You *Fly* at 240 Miles Per Hour!

IN THE BIG, BEAUTIFUL BEECHCRAFT TWIN-BONANZA

The BEECHCRAFT Twin-Bonanza
Flying 6 persons as far as 1,650 miles
at speeds up to 240 miles-per-hour.

New speed, new power, new luxury — and *six* different interior seating arrangements — are yours in the brilliant Beechcraft Twin-Bonanza. Here's the luxury and comfort of your own living room — styled to the ultimate in taste and decor — with unequalled stretch-out room for every passenger!

Supercharged engines provide *speed to spare*. And there's no ducking, stooping or stretching when entering or leaving the Twin-Bonanza.

The quiet, luxurious comfort of this outstanding airplane can only be fully appreciated in a demonstration ride.

The J. D. Reed Company of Houston, Texas, would welcome the opportunity of showing you how and why owning a Beechcraft is a profitable proposition. We will be glad to furnish you complete facts and figures about our attractive new leasing and financing plans.

Call or write
Mr. J. D. Reed, President,
J. D. Reed Company for full
information and details.

J. D. REED CO. INC.
SALES SERVICE
Beechcraft
DISTRIBUTOR
MUNICIPAL AIRPORT
HOUSTON, TEXAS
Telephone OLive 4-4351

keep your Executive Team at full strength

The "Executive Teams" of thousands of firms are strengthened by the rugged dependability of their Beechcrafts. The day in-day-out performance of these aircraft allow more executive time for urgent business . . . time for important conferences in far-away places . . . more time to explore new fields . . . more time for pleasure and relaxation.

We can help keep your team at full strength by insuring against loss of executive time by out-of-service aircraft. Servicing and maintenance of the "Business Fleet" is a specialty of our factory trained service staff. Let us check your airplane today . . . We will also be glad to explain our regular maintenance plan for greater safety — lower costs.

AIRCRAFTCO, INC.
New Municipal Airport
Wichita, Kansas

AIRCRAFTSMEN, INC.
Will Rogers Field
Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

ANDERSON AIR ACTIVITIES
General Mitchell Field, Milwaukee, Wisc.

ATLANTIC AVIATION CORP.
- Teterboro Airport
  Teterboro, New Jersey
- Logan International Airport
  East Boston, Massachusetts
- International Airport
  Philadelphia, Pennsylvania
- New Castle County Airport
  Wilmington, Delaware

BUTLER CO., AVIATION DIVISION
Municipal Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Manager
Love Field, Dallas, Texas

ELLIOTT FLYING SERVICE
Municipal Airport, Davenport, Iowa

LOPEZ GRACE AVIATION, INC.
Building No. 3 and No. 18
Broward County International Airport
Fort Lauderdale, Florida

THE NORMAN LARSON CO.
PLANESERVICE, INC. (Service Division)
Van Nuys Airport, Van Nuys, Calif.
(Los Angeles Area)

J. D. REED CO., INC.
Municipal Airport, Houston, Texas

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

TEXAS AVIATION CORPORATION
G. K. Roberts, Pounds Field
Tyler, Texas

TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 8, Municipal Airport, Tulsa, Oklahoma

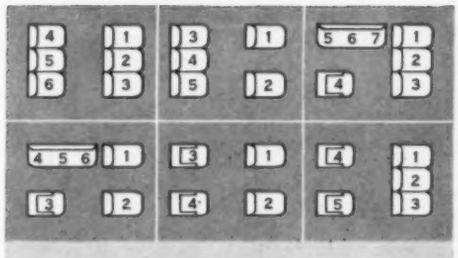
Put Your BEECHCRAFT in BEECHCRAFT Hands

GO PLACES
IN A COMFORTABLE HURRY

GET THERE FIRST IN A TWIN-BONANZA

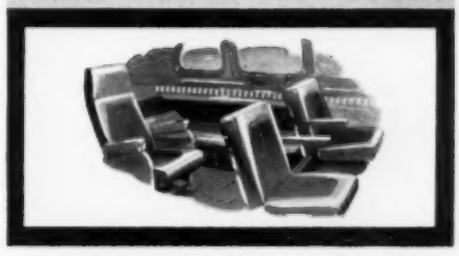
The big, beautiful Beechcraft Twin-Bonanza offers more for you than any other business airplane in the six-place field! Here are twelve of the dozens of ways in which the Twin-Bonanza is your best buy: (1) delivers more **power;** (2) has a higher recommended **cruising speed;** (3) carries more **payload;** (4) has greater **range;** (5) gives better **performance;** (6) is more **quiet;** (7) has better **visibility;** (8) compiles a better **safety** record; (9) comes **more fully equipped;** (10) has more **comfort** features; (11) **adapts better** to your individual needs; and (12) has a **higher resale value** than any other airplane in its class!

For complete information about the Twin-Bonanza and the finest financing plans in aviation, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas.



choose from six luxurious seating arrangements

Beautifully styled Twin-Bonanza interiors provide quiet and relaxation.



Six-place BEECHCRAFT Twin-Bonanza. Range — up to 1,650 miles. Speed — up to 240 miles per hour.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

LOCKHEED'S 500-MPH. JET STAR UTILITY TRANSPORT was ready for first flight early in September after the prototype was rolled out of the factory in Burbank on August 26. It was built in only 30 weeks from the drawing board stage. The project was initiated on January 7 and at that time the rollout date was set as September 4 for the first flight. Designed for off-the-shelf sale to the Air Force and then to business fliers after CAA certification, it is a private venture by Lockheed, which had invested $6,000,000 in it at the end of August.

NATIONWIDE ROUNDUP:

New Business In the Hangar

LOCKHEED IS CONTACTING CORPORATE PILOTS IN MANY CITIES as a sales research approach to eventual commercial marketing of its executive Model 329 jet transport, pictured on this page as it was rolled out of the Burbank hangar last month for first flight early in September. Military orders must precede any commercial deliveries. J. L. Norton of Lockheed's Georgia Division, which will manufacture the utility transport if it is ordered, has already contacted pilots in Dallas, Pittsburgh, Houston, Detroit and New York and will soon make calls in Tulsa, Chicago, Akron, Washington and other cities.

In hotel-room "briefings" for corporate pilots, Norton unreels a 6-minute movie of a model and charts and projects a series of color slides extolling the 500-mph. 10-12-place 329, and hands out colorful brochures. Pricing and engine information is not detailed but the outlook appears to be that the commercial version will have four GE or Fairchild jet engines producing about 2,000 lbs. of thrust each, or two larger jets of 4,000 lbs. each. The schedule calls for flight tests starting on Sept. 4, first static article going to the Air Force in May, 1959, followed by 10 or more deliveries to the military by May, 1960, when first commercial deliveries will be available—all this depending on Lockheed's success to sell the Air Force. Production would reach 10 per month by the end of 1960, half going to the military. Delivery spots, based on this schedule, are available now to corporate buyers.

The Model 329 is pictured as having an empty weight of 14,670 lbs. with a 28,000-lb. normal gross weight and 32,400-lb. maximum gross. Wing fuel capacity will be 1,640 gals. with optional slipper tanks adding 600 gals. for a total available fuel supply of 2,240 gals. weighing 10,650 lbs. for the wing supply and 4,400 lbs. for the optional supply, including the slipper tanks. Charts show it will have a range of 1,500 nautical miles with 1,640 gals., this being at 45,000 ft. and at a true air speed of 505 mph. with provisions for taxi, take-off, climb, cruise, 30-minute loiter at 10,000 ft., let-down, land and 5% reserve at landing.

Wing area is 523 sq. ft., span 53 ft. 8 ins., length 58 ft. 10 ins., height 20 ft. 6 ins., wing loading 61.9 lbs. per sq. ft. at maximum take-off weight of 32,400 lbs., 53.5 at normal gross of 28,000 lbs. and 40.2 at landing weight of 21,000 lbs.

Other design performance figures include stall speed of 80 knots or so with flaps and gear down and approach speed of 120 knots. This stall speed gives the Lockheed a speed ratio of 6 to 1. The wing, swept 34 degrees, will have automatic leading edge slats and the airplane will have an all-flying tail, on which vertical and horizontal surfaces move as a unit.

Sea level, standard-air rate of climb will be over 3,000 ft. per minute. Pres-

Lockheed Jet Utility Transport May Be In Denver For NBAA Meet

THERE is a possibility that the sensational Lockheed Model 329 10-12-place 500-mph. jet utility transport might be displayed in Denver October 2-4 during the National Business Aircraft Association's 10th annual meeting and forum. The airplane was scheduled for its first flight on September 4, in which case three weeks or more for shakedown would remain before the Denver display. NBA Excutive Director Bill Lawton said scheduling under such circumstances could not be more than tentative but that Lockheed salespeople will make efforts to show the airplane in Denver if at all possible.

Hotel exhibits, such as mock-ups and models, will include On-Mark's proposed turbo-prop based on the Douglas A-26 with a new fuselage and engines from the Lockheed Electra design; a turbo-prop seaplane project of Aircraft Marine Engineering, Los Angeles, and Grumman's turbo-prop executive transport. Current and conventional business aircraft headed by the new Piper Comanche and helicopters will be displayed and will include the new executive version of the Vertol 44 tandem-rotor transport.

Among various forum discussions will be one devoted to turbo-prop aircraft for business use, with participating manufacturers including Vickers, Fairchild, Grumman, On-Mark, Lockheed, Rolls-Royce, Allison and Napier.

NOW OPEN

for

EXECUTIVE, BUSINESS and PRIVATE OPERATORS

The NEW Addison Airport

The World's Newest and Finest Exclusively Executive Airport

ADDISON AIRPORT

P. O. BOX 14201 • DALLAS, TEXAS

4,500-foot Asphaltic Runway, 150°-330° Headings
Complete Ground, Ramp and Flight Service
122.8 Megacycles Unicom
Terminal and Restaurant Facilities
13 Miles from Downtown Dallas
Hangar Storage

SOUTHWEST AIRMOTIVE'S SPECTACULAR NEW SKYVIEW TERMINAL LOUNGE FOR BUSINESS FLIERS is nearing completion at Love Field in Dallas. Part of a $4,000,000 new base, the private and air-conditioned terminal will feature a huge glass front with a main floor lobby and upstairs dining room and coffee shop. The terminal also houses a flight room, lockers, restrooms, lounge areas for pilots, plane-owner conference room and offices. Two hangars next door are already in use and will be augmented by two more large hangars to go up adjacent to them this fall.

surization will give the cabin an 8,000-ft. pressure altitude when the airplane is cruising at 45,000 ft., this being a pressure differential of 8.75 to 1. Speed brakes will permit rapid rates of descent.

Military performance charts indicate take-off and landing capabilities over a 50-ft. obstacle within 3,000 ft. of runway distance and the indication is that the Lockheed will have ample space on 5,500-6.000-ft. runways even in hot weather. Thrust reversing devices will shorten this.

The passenger cabin interior is 28 ft. long and is a circle 74 inches in diameter. This provides for two rows of airline seats spaced 40 inches apart along a 20-in. aisle for 10 passengers, with lavatory and buffet at the rear.

Design-wise, the Lockheed features engines mounted above and behind the wing and behind the rear pressure bulkhead.

AIRESEARCH AVIATION SERVICE Division of the Garrett Corp. at Los Angeles International Airport is doing considerable work on the DC-3 owned by Colorado Interstate Gas. Pilots Dick Shroads and Criswell brought in the craft for installation of Bendix X-band radar, new inverters, auto-pilot, omni, 200 amp. generators, wing removal and inspection, new fuel tanks and Winslow oil filters.

A number of other DC-3's have been undergoing work at AiResearch. One from Axelson Manufacturing, with Pilot Angelo Pappas, is getting radar modification and 100-hr. inspection. The first of the Civil Aeronautics Administration's DC-3's came in for Maximizer installation and Garrett's own plane received a Janitrol heater installation. Two Super Beeches came in from widely-varying distances. Pilots Bill Dodd and H. Werkle brought the Food Fair Store's Super from Miami to be equipped with the lightweight AVQ 50 radar and a Super from McCulloch Motors, whose plant is just opposite LA Airport from AiResearch, was brought in by Pilot Jim Dyerly for a double engine change, 100-hr. inspection and exterior painting.

The Martin Company's 440 was re-

Finest Executive Airplane Available

CUSTOM DE HAVILLAND DOVE

Priced for Immediate Sale

$55,000

With Factory Zero-Time Mark 2 Engines

Enjoy the modern features of this completely-equipped, efficient transport—category executive aircraft. It has a custom 9-place interior . . . custom panel . . . anti-icing . . . auxiliary fuel tank . . . Lear L-2 autopilot with altitude controller and automatic approach coupler . . . dual ARC omni . . . dual Lear ADF 14's . . . 50-channel ARC transceiver . . . ARC low frequency receiver . . . complete ILS . . . Bendix 3-light marker . . . isolation amplifier . . . dual speakers . . . flush antennas . . . new tires . . . new brakes.

Price $55,000 — $25,000 *financed at 6% simple interest.*

Call Jack Riley, 11,223 *Cinderella Lane, Telephone FLeetwood* 1-1721

Dallas, Texas

ceived off the Convair line for an executive interior, additional wing tanks, exterior painting, an auxiliary power unit and miscellaneous radio work. American Can's 440, Pilot Jim Hopkins, arrived for Convair bulletin modifications. Earl Hartman took back Goodyear's D18 Beech after a 100-hr. inspection.

HORTON & HORTON CUSTOM WORKS at Meacham Field, Ft. Worth, says even the proverbial "sink" was incorporated in a compact black oak Formica galley with mixing bar, thermos service, hot cup and drained ice chest in the Thompson & Green D-18 Beech from Nashville. Space in the former baggage compartment was made usable by aft bulkhead removal and CAA-certified circular beef-up. Eggshell headlining, turquoise nylon seats, red carpet contrast against the featherweight black oak laminate used on fore and aft bulkheads.

Pan American Petroleum (formerly Stanolind) flew another Douglas A-26 in for a total of four H & H interiors for them. . . . Mrs. Kenneth Spencer flew in from Kansas City to select fabrics for a new Aero Commander 560-E Gold Crest interior, the third Spencer Chemical airplane styled by H & H. . . . J. R. Turk, Tennessee Gas Transmission, Houston, supervised the TGT Martin B-26 receiving a beautiful weight-saving, cleanable H & H interior treatment designed for the entire fleet. . . . J. W. Eagleton brought the Shell Pipeline Dove back for cockpit seat "pilot ease" upholstery, baggage utility upholstering and 18-month interior perk-up. . . . Bill Buchanan's Chicago B-Line Air Charter Service received the full interior treatment — his fifth interior includes compact galley, aft bulkhead removal and beef-up, a regular window replacing the port-hole and Formica Skytables. The turquoise and beige color scheme was high-pointed with woven grass laminate on bulkheads.

REMMERT-WERNER at Lambert Field in St. Louis reports a new exterior paint job and new interior for Hank Haddock's Falstaff Brewing DC-3. . . . Monsanto Chemical, Ralph Piper, chief pilot, had a set of Remmert-Werner lightweight landing gear doors installed on one of its DC-3's. . . . The R. Potashnick Lodestar was in for wing removal and installation of an ARC-15 omni. . . . Walter Westcrfield, pilot for General Insuror's Aero Commander, is having a Federal Telephone F-300 transistorized autopilot installed. . . . Routine jobs: Aileron change for Skip Wittner's Kewanee Oil DC-3; engine change and 100-hr. for John Belmeyer's Gardner Denver E18 Beech; ditto for Ralph Whitworth's Coca Cola DC-3; B. W. Sandberg brought Greenlee Brothers' DC-3 in for 100-hr. and relicense; double-engine change for Bud Little's Westinghouse Electric Lodestar; 100-hr. and relicense for Texas Gas and Transmission, and engine change for Robert Veller's Super Service Motor Freight's D18S.

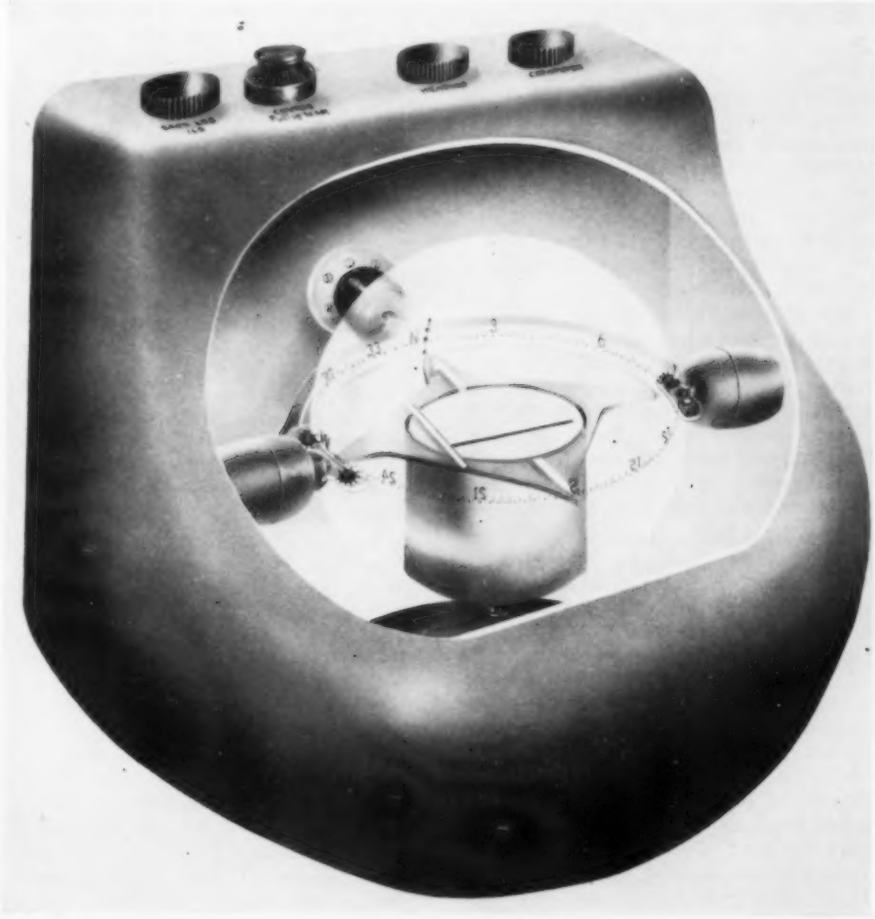
STEWARD-DAVIS, Los Angeles engine overhaul agency, has opened a suite of offices at Skymotive's executive aircraft center on O'Hare Field in Chicago. Lloyd (Pancho) Prunty, formerly chief of quality control for S-D, is sales manager there, assisted by Ted Whaley, formerly West Coast rep. This new office places S-D 2,000 miles closer to many customers.

PACAERO ENGINEERING at Santa Monica has named veteran aircraft designer Gordon Israel as its chief engineer. Designer of PacAero's prime product, the Learstar executive transport, Israel returns to the firm following an absence of several years during which he has served as an industry consultant on aircraft engineering problems.

Gordon Israel

PacAero, of which Vernon B. Benfer is president, is a wholly-owned subsidiary of Pacific Airmotive. Gordon Israel has served in high-level engineering positions with Stinson, Grumman and Howard Aircraft Corp. In conjunction with Ben O. Howard, he designed and flew many early racing-type airplanes. At PacAero in addition to over-all engineering, he will be in charge of developing new proprietary items to improve the capabilities of present-day aircraft.

PAN AMERICAN AIRWAYS' customer service shops at Brownsville, Texas, have completed overhaul and modification of Food Machinery and Chemical's Douglas B-23. Among the newer developments incorporated is a short-stack installation, second of its type and effective in reducing cabin noise and keeping the aircraft clean as well as reducing maintenance costs and weight. Dick Mahoney, chief pilot



THREE-DIMENSIONAL FLIGHT INSTRUMENT for airplane and helicopter flying, shown here, was designed by Raoul Castro, Brookfield, Illinois, executive pilot. He says it will picture aircraft attitude-horizon-navigation information more realistically and simplify instrument flying. A miniature replica of an airplane moves about three axes with respect to and within a gyroscopically-stabilized globe representing the horizon. Heading, pitch, roll and yaw changes are presented and course and glide path indicators in the instrument facilitate navigation and instrument approaches. Other aids can also be incorporated in the instrument. Castro has a patent pending for the device, useful to both the expert pilot and novice.

for Food Machinery, selected and PAA crews installed a beautiful new interior in the B-23. . . . The shop is ready for the mating of the center section and the fuselage of the USOA DC-4 rebuild job now in progress. . . . A utility DC-3 operated by Socony in Venezuela is in the shops for overhaul. . . . Nestled among the DC-4's, C-46's and DC-3's in the customer shops is a Helio Courier belonging to Dean Porter. It received some damage repairs in addition to light service work, showing that this base goes from big to little and back again in the aircraft it services.

YARDNEY ELECTRIC CORP., 40-50 Leonard St., New York 13, has a new bulletin describing silver-zinc batteries selected by Bell Helicopter Corp. for its 47-J helicopters, the type operated by the Army and Navy and for President Eisenhower. Performance data is included.

L. B. SMITH AIRCRAFT CORP., which has completed its move into new million-dollar quarters on Miami International Airport, is planning a gala opening for early October. . . . New business booked by LBS includes an agreement to install custom interiors in three new Douglas DC-6's to be delivered soon to Trans Caribbean Airways. LBS will convert them into versatile DC-6B's with the most luxurious accommodations installed in any airliner. The 102-passenger interior design and color schemes were selected by Mrs. Roy Chalk, wife of Roy Chalk, president of the airline, which will use the DC-6's for tourists between New York and Puerto Rico. Under the agreement between Irving Buckley with Trans Caribbean, completion of the aircraft will require about 90 days each. . . . L. B. Smith last month delivered another CW20T transport category version of the C-46 to Cordova Airlines, this one being delivered personally in Anchorage, Alaska, by Herrol Bellomy, executive vice president of L. B. Smith, to Merle K. Smith, Cordova president.

AERODEX, INC., Miami International Airport, has received an Air Force order in excess of $1,100,000 pertaining to the overhaul of aircraft engines during a 4-month option period on a present Air Force contract. The engines involved are R-2800 CB series, used on Air Force Douglas C-118 and Convair T-29 aircraft.

SOUTHWEST AIRMOTIVE, Love Field, Dallas, last month completed an 8,000-hr. inspection, new interior and installation of safety performance kit on Monty Ritchie's J. A. Cattle Company Twin Beech from Amarillo. . . . Shamrock Oil's Twin Beech, piloted by Tom Smith, received an 8,000-hr. inspection, complete new interior, safety performance kit and paint job, and Shamrock's chief pilot, Jim Boyd, brought in his Lodestar for a 100-hr. inspection. . . . Poddy Parish's Trinity Drilling Lodestar received minor repairs, as did the Pillsbury Mills E18 Beech and Pilot Paul Wheeler had the Fletcher Oil Lodestar in for periodic inspection.

SHORT STACKS for Food Machinery and Chemical's B-23 are the second installation of this type by Pan American Airways at Brownsville. Weight and maintenance are reduced, cabin noise level is reduced and cleaner airplane operation is assured with it.

READING AVIATION SERVICE, Reading, Pennsylvania, has contracted to perform the prototype conversion of Vertol Aircraft's H-44C transport helicopter for executive use. The big tandem-rotor copter will be completely fitted with a plush interior accommodating 10 passengers including crew. This helicopter was recently certificated by CAA for commercial operation in three versions—(1) cargo, with 2.5-ton useful load, (2) airliner, with 19-seat capacity, and (3) corporate and private executive operations. Reading Aviation Service, with Paul Zimmerman, New York aircraft interior decorator, will install 5 reclining swivel chairs, one 2-place divan, a secretary's desk and chair, stewardess jump seat, powder room, bar, and broadloom rug and foam rubber underlay. Shades of tan, gold and gray will be used for color. The conversion will be completed in five weeks, after which it will tour the United States on a sales and demonstration tour.

ASSOCIATED RADIO, Love Field, Dallas, has installed in the Creole Petroleum DC-3 from Caracas, Venezuela, a complete new wiring system, RCA radar, dual ARC ADF 21's, Collins 17L-4 transmitter and Flite-Tronics CA-20 cabin amplifier. . . . Complete re-wiring was also performed on the Shamrock Oil and Gas Twin Beech from Amarillo. . . . Colonel E. W. Estelle and Bob Alsop had the Esso Shipping Convair in for omni work. . . . Associated Radio has completed the DC-3 prototype installation of the new Collins AP-101 autopilot system in Don Beeler's Delhi-Taylor Douglas. . . . Paul Rider's Halliburton Oil Well Cementing DC-3 received a new Collins 17M-1 transmitter and 51V receiver. . . . The new Sperry C6A system has been installed in R. M. Stone's Life and Casualty Company Lodestar from Nashville. . . . RCA AVQ-10 radar with McMillan radome has been installed in a United Gas DC-3 from Shreveport, Cotton Jeter, chief pilot.

EXECUTIVE AIRCRAFT SERVICE, Garland Airport, Dallas, completed overhauling a United Gas DC-3 for E. P. (Cotton) Jeter, Shreveport, installing Maximizer kit, Janitrol heater aft installation and new Goodyear spot brakes. . . . Charley Johnson brought in his Reynolds Metal DC-3 from Louisville for a new paint job, airframe inspection, new EAS hydraulic system, dual Wilcox ADF's and miscellaneous work. . . . Dow Chemical, Freeport, Ted Merchant, sent in a DC-3 for 1,000-hr. inspection and minor interior alterations. . . . Other jobs included a 1,000-hr. for Stein Lee's Gulf Oil DC-3 from Ft. Worth, engine changes and inspections for Ed Armstrong's two Sid Richardson DC-3's from Ft. Worth, miscellaneous radio, airplane and engine work for Beryl Menard's Gulf Interstate Gas Lodestar from Houston, and radio work for Doc Copeland's Rutherford Oil Lodestar from Houston.

DALLAS AERO SERVICE, Love Field, Dallas, completed installation of its Lodestar speed modification on the Odessa Natural Gas Lodestar and Pilot Ray Hodge reported back from flight that his Lodestar's speed had been increased 17 mph. by the work. . . . Bill Eagleton with Shell Pipeline's Dove from Houston and Walt Hedrick with Shell Oil's Dove from Tulsa were in for engine changes. . . . A Federal autopilot was installed in an El Paso Natural Gas D50 Twin-Bonanza. . . . Double engine change going to 295-hp. Lycomings was performed on the W. J. Holladay C50 Twin-Bonanza from Indianapolis with installation of Hartzell 3-blade props and DAS propeller unfeathering system. . . . The Fayette Manufacturing D18 Beech from Fayette, Ohio, was in for double engine change and prop overhaul and Curtis Voekel brought in Pacific Northwest Pipeline's Lodestar from Salt Lake City for a 100-hr. inspection. . . . Aero Commanders in the shop last month were those of Champlin Refining, A. R. Dillard, Olin Mathieson, University of Illinois, W. H. Nichols, Signal Oil, Brown Aero and Convair. . . . J. W. Womack has been named service representative and customer man for DAS, according to E. W. Bailey, general manager. Womack joined DAS after 11 years with Continental Air Lines and Pioneer Air Lines.

AIRWORK'S OPERATIONS SYMPOSIUM on Sept. 19-20 at the Airwork plant, Millville, N. J., preceding the 8th annual P & W engine forum, will change the familiar forum into a full-blown short course covering many

AUTHORIZED
Cessna
SERVICE

These Authorized Stations Feature Flat-Rate Service

Aircraft Sales Company
Meacham Field
Fort Worth, Texas

Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
International Airport
and Clover Field Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport and Love Field
Dallas, Texas

Executive Aircraft Company
Municipal Airport
Kansas City, Missouri

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Poelman Aircraft Co.
New Orleans Airport
New Orleans, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

SERVICE SATISFACTION

SMILING SERVICE is what you expect and always receive when our Authorized Cessna Service Stations solve your maintenance needs! We furnish factory skills, factory equipment and factory satisfaction. Cessnas are our specialty . . . and we follow a policy of giving Cessna users a little more, a little better service — LIKE OUR FAMOUS 1-2-3 CESSNA FLAT-RATE SERVICE!

1 You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all maintenance needs.

2 You get genuine Cessna parts and factory-trained workmanship.

3 You save money and time and we stand behind every job for your fullest satisfaction.

technical problems of aviation operations. Manufacturers are sending their top experts to answer questions and display advanced demonstration units. A "coffee clatch" approach will be used for personal discussions between pilots and maintenance men and the experts in a "discussion tent." Operators of flat aircraft engines will be given opportunity to learn the latest in a special session on these power plants, with Bendix service experts debunking some misconceptions about carburetor leaning, head temperature and best power and explain operation of the PS series carburetors. A pool party and buffet supper at the Hine pool will provide the entertainment. Airwork expects a record-setting attendance by pilots.

L. B. SMITH AIRCRAFT at Miami International Airport has promoted Ed Brush and Wesley Peckham to be vice presidents in charge of engineering and Aerosmith products, respectively.

AIR REPORT

(Continued from page 5)

has signed and paid in advance for a 50-year lease on its 20-acre factory site, and has appointed Richard S. Martin as sales manager. Martin will soon announce plans for expanding the sales program for the 4-place Mooney Mark 20.

NEW SCOTT EXECUTIVE lightweight, low-cost portable oxygen system weighs 12 lbs. and serves two persons to 20,000 ft. It includes 22-cu. ft. cylinder, carrying handle, miniature regulator, guage and two mask outlets. Regis Stevenson, Scott's civil aviation sales manager, is shown with it.

SALES OF 3,749 LIGHTPLANES DURING JANUARY-JULY with factory billings totaling $61 million for the period have been announced by the Utility Airplane Council of the Aircraft Industries Association. Deliveries of 454 planes in July, down from 513 delivered in June, were included, and the report covers Aero Design, Beech, Call Air, Cessna, Champion, Mooney, Piper and Taylorcraft companies.

NEW CESSNA DEMONSTRATOR FINANCE PLAN, to be handled by National Aero Finance Co., a wholly-owned Cessna subsidiary, allows dealers to obtain demonstrators at lower initial cost with lower monthly payments. As an example, a dealer can obtain a $10,000 Model 172 for $800 down with the balance financed 24 months, payments starting at $248 the first month, declining slightly each succeeding month and the balance due at the time of the 24th payment.

THE SENATE HAS CONFIRMED Elwood R. (Pete) Quesada as chairman of the newly established Airways

Airmen's Calendar

Sept. 15—Oakland Air Fair, Oakland International Airport.

Sept. 19-20—Airwork Aviation Operations Forum, combined with 8th Annual P & W Airwork Engine Forum, Airwork Corp, Millville, N. J.

Sept. 24-26—Annual Aviation Spark Plug and Ignition Conference, Secor Hotel, Toledo, Ohio.

Sept. 25—P & W Southwest Airmotive Engine Forum and Pilots Party, Melrose Hotel, Dallas.

Sept. 26-27—5th Annual Michigan Aeronautics Conference, Alpena.

Sept. 27—8th Annual Airwork-P & W Aircraft Forum, Airwork Corp., Miami Villas, Miami, Florida.

Sept. 30-Oct. 5—SAE National Aeronautic Meeting, Hotel Ambassador, Los Angeles.

Oct. 2-4 — 10th Annual National Business Aircraft Association Meeting, Cosmopolitan Hotel, Denver.

Oct. 2-4—National Airports Conference, University of Oklahoma, Norman, Oklahoma. Sponsored by American Association of Airport Executives, University of Oklahoma and with CAA cooperating. Contact Joe Coulter, Max Westheimer Field, University of Oklahoma.

Oct. 12-19—9th Annual All-Texas Air Tour, covering 3,000 miles and 36 stops. Address correspondence to Texas Air Tours, 307 Walton Bldg., Austin, Tex.

Oct. 20-22—4th Annual Western Forum of American Helicopter Society, Statler Hotel, St. Louis. Forum Chairman is Marvin D. Marks, McDonnell Aircraft Corp., Lambert Field, St. Louis.

Nov. 1-3—Dallas Air Fair, Addison Airport, Dallas.

Nov. 13-15—Annual NATA Convention, Hotel Adolphus, Dallas.

Nov. 15—National Pilots Association Annual Convention, Hotel Adolphus, Dallas.

Nov. 18-20—Annual Beech Distributors Meeting, Wichita.

Nov. 20-22—ADMA's 30th Meeting, Sheraton-Cadillac Hotel, Detroit.

The Helping Hand...

...must be a sure hand!

Make sure you have the very best...

and avionics are best by F A R*.

Faulkner FAR **Air Radio**

INTERNATIONAL AIRPORT HOUSTON, TEX.

Modernization Board. . . . **CIVIL AERONAUTICS BOARD** has denied a fare increase needed by the airlines to offset increased operating costs.

ANTIQUE AIRPLANES are needed to feature the October 25-27 opening of a new $7,000,000 terminal on Love Field in Dallas. Special awards for the best collector items will be presented at an Old Pioneers banquet on Oct. 25, according to Al Harting of Southwest Airmotive, display committee chairman. He invites queries from anyone wishing to display antique aircraft in the event, expected to draw over 100,000 spectators.

DC-3 REPLACEMENT BY FEEDER AIRLINES is provided by Congress approval of legislation authorizing government guarantee of up to 90% on loans to local and territorial carriers for purchase of aircraft, each carrier limited to $5,000,000. . . . **FOURTEEN CORPORATIONS** have purchased Fairchild F-27 propjet business transports although Fairchild has announced orders only from Continental Can, General Tire, Butler Aviation and the Banco de Mexico.

CECIL MEADOWS, aviation director of Kern County, Bakersfield, California, died of a heart attack on Aug. 3. He was nationally prominent in airport management activities and had been president of the American Association of Airport Executives as well as head of the California Airport Executives Association.

CIVILIAN CONTRACT SCHOOLS last month received awards covering instrument training for some 500 Army pilots. The schools are Hinson Aviation, Baltimore; Central American Airways, Seymour, Ind., and Augusta, Ga.; Ross Aviation, Tulsa, and Taloa Academy, Oakland.

FLYING PHYSICIANS ASSOCIATION, with almost 500 active members, has established headquarters in Tulsa at P. O. Box 3275, with Mark E. De Groff executive director and Dr. S. D. Sullenberger, Dandridge, Tenn., president.

OVER 2.5 MILLION HOURS of airline flying, including 1 million hours in North America, have been amassed by the Rolls-Royce Dart propjet engine.

OVER 3,000 RADIO STATIONS suitable for ADF use in flying are listed in a new 80-page booklet, "ADF Stations," published by LearCal Division of Lear, Inc., Santa Monica, and now available at $1 through Lear distributors.

TIMMINS AVIATION, Montreal, has been named Beechcraft distributor for Quebec and Canada's maritime provinces. John A. Timmins is president and Jack Graham is general manager.

THREE HELIO COURIERS have been delivered by Helio Aircraft Corp., Norwood, Mass., and Pittsburg, Kans., to the Peruvian ministry of war for use as liaison and re-supply aircraft in remote areas.

PROPJET CONVERSION OF THREE CONVAIRS with Napier Eland turbines has been contracted with D. Napier & Son of England by Air Carrier Service Corp., Washington, D. C., for a Brazilian airline, Real S. A. Transportes Aereos. The $2,000,000 job includes spare engines. The Elands will boost the Convair 340's cruising speed 50 mph. and add 800 miles of range with full payload.

CROSS-WIND LANDING GEARS FOR U. S. MARINES LIAISON AIRCRAFT have been ordered from GeissGears, Inc., 2350 Tennyson St., N. W., Washington, according to John H. Geisse, president and cross-wind pioneer. This marks first military order of cross-wind gear as a separate item.

SEVENTEEN AIRLINES HAVE ORDERED $16,500,000 WORTH OF BENDIX PB-20 AUTOMATIC FLIGHT CONTROL SYSTEMS, the latest order being from Convair for its Model 880 jet airliners. The PB-20 is all transistorized and super-sensitive for high-performance planes.

NEW SALES MANAGER FOR THE FEDERAL AUTOPILOT is B. V.

AVIATION RENDEZVOUS

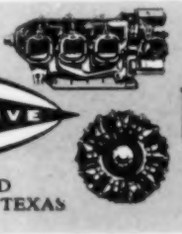
Dallas Airmotive's Island Service Division, located on the Municipal Airport in Galveston, Texas, is the ideal service organization for all airplanes operated in the Americas. The Island Service Division is especially ideally situated for those who operate executive, business and private aircraft in the Gulf Coast area.

At the Island Service Division, Dallas Airmotive provides modification for all types of aircraft; custom luxury interiors; aircraft painting; radio-electronics-navigation sales and installation; transient service; overhaul for fixed and rotary wing aircraft; storage; accessory sales, installation and overhaul.

In Dallas, Dallas Airmotive will continue to provide the finest in engine overhaul facilities and services.

Centrally located . . . all aviation services from the same *Reliable* company.

Island Service Division
GALVESTON, TEXAS



DALLAS AIRMOTIVE INC.

6114 FOREST PARK ROAD
FLeetwood 1-3771 • DALLAS, TEXAS

Washington Office:
Woodward Building
733 15th Street, N.W.
Washington, D.C.

New York Office:
1219 Marine Terminal Bldg.
La Guardia Station
Flushing 71, N. Y.

AERIAL ACROBATICS

To Alford Joseph Williams Jr., a naval aviator and test pilot, goes credit for having developed to a fine art, the aerial acrobatics used in air combat. His interest was in acrobatics and speed. In 1923 he set a record of 266.59 m.p.h. winning the Pulitzer Trophy for that year. As one of the early test pilots he contributed much to commercial aviation.

Another contributing factor was the stabilizing influence of "aviation insurance" pioneered in 1928 by the United States Aircraft Insurance Group to bring financial relief to a heavily burdened industry.

Now expanded to over 60 member companies, this same "U. S. Group" still serves the aviation market as it has continually for the last quarter century.

Be sure that you have the prompt service and lasting security of "U. S. Group" insurance. Coverage is conveniently arranged through your own agent or broker.

USAIG

UNITED STATES AVIATION UNDERWRITERS
INCORPORATED
80 JOHN ST. • NEW YORK 38, N. Y.

ANDRAU AIRPARK, INC.

- 24 HOUR OPERATION
- 2 LIGHTED RUNWAYS — 4714'
- 80-90-100 OCTANE GASOLINE
- LOW FREQ. HOMING BEACON 269 kc AAP
- COMPLETE MAINTENANCE SERVICE
- RESTAURANT
- 15 MILES DUE WEST OF HOUSTON
- AVIS RENT CARS ON FIELD
- CANAL FOR SMALL SEAPLANES — RUNS EAST-WEST

HELENE B. WOLFF
Owner & Mgr.

Andrau AIR PARK
HOUSTON

HONORS FOR SERVICE TO AIRCRAFT INDUSTRY have been bestowed by the Aviation Distributors and Manufacturers Association to parts and equipment distributors shown above. Left to right are: Standing, Turner Moore, Jr., Auto-Lite, ADMA president; Phil Heckler, Air Associates; H. A. Eckles, Air Parts International; Eldon Byers, Standard Products; G. P. Van Dusen and G. R. Galipeau, Van Dusen Aircraft Supplies, and C. A. Degucz, AutoLite, who presented plaques. Seated, J. L. Hainsworth, Central Aero Supply; F. A. Twomey, D. R. McCann, J. G. Hussey and W. L. Carolla, all of Air Associates.

Deltour, who will headquarter in San Fernando, California. The Federal line of accessories will be increased so that the autopilot will receive signals from a directional gyro, altitude control, omni and ILS receivers for complete business aircraft automatic control.

COLLINS AP-101 AUTOPILOT SYSTEMS will be installed in 33 more Trans-Canada Air Lines Viscounts, 18 of which are already using the AP-101.

CESSNA'S 30,000TH AIRPLANE, a Model 172, has been purchased by a New York firm which used it first for 25 hours on a lease plan.

WATER BOMBING

(Continued from page 23)

area of 2,000 sq. ft.

The Air Service Division's planes and pilots move men and supplies into major fire areas; evacuate inhabitants; take aerial inventories of timber stands; apply insecticides from the air; air-drop young fish to re-stock lakes; fly in fur-bearing animals to re-stock wilderness areas; perform aerial search and rescue missions; aid police in hunting down criminals; transport physically and mentally-ill patients to and from hospitals and perform many other services. Its planes operate on wheels, floats and skiis as conditions demand.

FLY-IN HONORS PIPER

(Continued from page 28)

the skill and traffic-minded safety displayed by the incoming pilots. As many as 15 planes were on final approach at the same time with as many in the pattern.

After it was all over, a flagman at the end of the runway helped out as departing aircraft took to the air every 10 seconds. In all the landing, taxiing, parking and leaving, not a single ship was scratched or dented.

just 15 steps...
from your car to the elevator!

Come as you are, and drive right in! Register, get in a private elevator and — presto — you're in your room. It's only 15 steps from car to elevator at The Adolphus ... In the meantime your car is parked in our *Connecting Garage*. Next time, stay at The Adolphus.

in Dallas.. HOTEL Adolphus

OHIO OIL SUPER VENTURA is pictured at Collins Radio's Red Bird hangar in Dallas for AP-101 autopilot check. Other Collins equipment in it includes dual 17L-4 transmitters, dual 51R-3 receivers, dual 51V-2 glideslope receivers, dual DF-201 ADF's, dual 37R-1 antennas, Integrated Flight System on pilot's side with omni bearing selector and ID-48 on right, and 37X-2 marker beacon antenna. Howard Aero made the installation.

(FLIGHT MAGAZINE Photo.)

SUPER VENTURA

(Continued from page 37)

could build a new plant or increase their refinery capacity for a million bucks. Many board of director members might go along but there's still a terrific job ahead on selling the stockholders. So I'm not scared of all these newly announced jet and turbo-prop jobs with the million dollar price tags, especially since we still don't know what the speed, range and servicing problems are going to be. We have an airplane that's just plain standard which can be serviced and repaired anywhere you go. Plenty of parts for the R-2800 engines and plenty of shops with mechanics who can service them. Now that the million-dollar airplanes have been announced our sales have picked up because many companies have been waiting to see what they would do and what the price would be. The survey people a few years ago went around the country talking about a $400,000 jet job. Now they're up to $750,000 to $1 million. No firm price has been announced. So many of the big companies needing fast, safe air transportation are through waiting."

How about the future? Dee Howard answers that question by stating his present production plans run well into 1960 on the Super Ventura and that they have located enough low-time airframes to take care of any reasonable demand. They have cut the man hours of labor from 67,000 (third production airplane) to 29,500 hours on airplane number 18. Consequently he expects to give as much if not more airplane in the future for the same if not less money. They can turn out a complete airplane every 21 days with their present payroll and production line.

While trade-ins are a big problem and the Howard organization can not go far on fancy trades, most concerns are willing to sell off their old craft in case of replacement with the Super. Howard is now working up some plans for leasing the airplane to companies who find this system more attractive than outright purchase.

Two principal current sales stimulants involve the "word of mouth" from the executive pilots now flying the airplane and the service policy of the company. In the case of the pilots it doesn't take many Supers flying high utilization hours all over the country to get the amazing performance pretty well documented. One professional pilot quit a flying job he had for 14 years in order to go with a company taking delivery of a Super. "I like horsepower," he told us, "and when you can fly for seven hours at 300

Yes - "PRECISION" has A FULL HOUSE

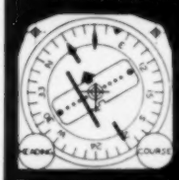
Everything from the Firewall Forward

Aircraft Engines
Aircraft Propellers
Aircraft Accessories
Kustomer Sales
Kustomer Service

Precision Aeromotive Corporation

International Airport Houston, Texas Phone MIssion 5-6636

AT ASSOCIATED RADIO



THE BEST

Is Smaller and Lighter

Better performance, more dependability, simplified instrument presentation, less weight, less power drag, less rack space—these great accomplishments are available now from ASSOCIATED RADIO with the newest and latest communications and navigation equipment.

Collins, Sperry, RCA, ARC, Dare, Comco, Flite-Tronics, Sun-Air and Electro-Voice—from these leaders we stock the most modern developments.

If you are hauling around too many pounds of unnecessary weight . . . sacrificing needless space and electrical loads . . . for less than optimum performance, ASSOCIATED RADIO solicits an opportunity to eliminate your handicaps.

ASSOCIATED RADIO CO.
CUSTOM LOVE FIELD DESIGN
DALLAS

FLeetwood 7-2891

We are CAA Repair Station No. 3664, Radio Class 1, 2, DME and Limited Radar.

miles per, and carry 11,000 pounds, that's for me." Howard is also building quite a reputation for "service after the sale." A specialized maintenance engineer is constantly on the road calling on every owner periodically not only for preventive maintenance and expert advice on every detail of the aircraft but also in search of improvements for the airplanes to come suggested from operating experience with those in use.

So it is quite apparant that acceptance by American industry of the Howard Super Ventura is not just happenstance. Engineering know-how coupled with an intimate knowledge of the business airplane market and backed up by a lot of guts and money are the simple, old-fashioned ingredients of the time-honored American free-enterprise success formula. It is a real testamentary to Dee Howard and his brilliant staff of co-workers that all this came about in less than 30 months from the time the first airplane took flight. "Our biggest handi cap right now," says Dee, "Is that olc No. 1 is still the only demonstrator w have, as the orders keep rolling alon just fast enough to keep us from build ing a production model for demon stration purposes."

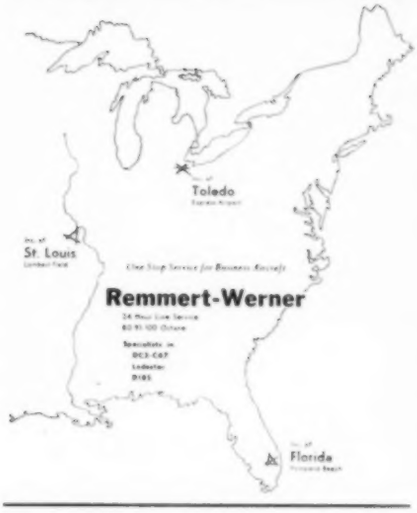
While we are not in the predictin business it does seem apparent righ now that there will be more significan business flying news to emanate fron the Howard organization in the year to come. ★ ★ ★

WHAT ?? WHERE HOW MUCH $

IFR HOOD

First in Safety! First in Comfort!
First in Pilot's Choice
The modern method of simulated instrument flight for training and maintaining proficiency.
$15.00 at your Airport or
FRANCIS AVIATION
Box 299 Lansing, Michigan

Arizona's Airport TUCSON ★



$500,000.00 CASH
FOR AIRPLANES
We'll spend this each month for clean light twins and single engine or complete dealers stocks new or used.
We pick up — no red tape.
VEST AIRCRAFT CO.
EMpire 6-2663
Box 5306 Denver 17, Colo.

at YOUR command...
master craftsmen who bring to life the unmatched excellence of Charles Butler designed interiors.

L.B. Smith AIRCRAFT CORPORATION
International Airport • Miami, Fla.

EXECUTIVE AIRCRAFT • Quick, satisfying results in buying or selling executive planes from large multi-engine thru Bonanzas.
JAI
Phone, wire or air mail
BILL BUCHANAN
MElrose 7-1102
JOHNSON AIR INTEREST
Racine, Wisconsin

NAVCO Inc. Lambert Field, St. Louis, Mo. PErshing 1-1710
has in stock
A.R.C. Bendix Collins
Sperry Wilcox
Executive Aircraft Radio

SALES OPPORTUNITY
Offering unusual opportunity for Fixed-base Operator interested in dealership for Cessna products in State of Iowa. Three choice locations available. All locations with paved runways and CAA facilities. Cessna never represented in any of these locations. Operator must be interested in sales. For personal interview and further information, write Lloyd Aviation, Inc., % Wholesale Dept., Box 612, Des Moines, Iowa.

Immediate Delivery
We stock, overhaul, and install
PRATT & WHITNEY WRIGHT
R1830 R1820
—75, —92, —94 —202, —56, —72
R985 R1340 R2000
and our most popular DC-3 engine
R1830 - SUPER - 92
ENGINE WORKS INC.
Lambert Field St. Louis, Mo.

Executive Transport Aircraft
All Models — New and Used
We can save you time and money
Sales — Procurement — Trades
Leases — Finances
Welsch Aviation Company
60 East 42nd Street, Suite 729
New York 17, New York, MUrray Hill 7-5884

NON-BREAKABLE TETRALITE
SPARK PLUG TERMINAL SLEEVES
FOR THREADED OR STANDARD LEADS
J. E. MENAUGH COMPANY
548 WASHINGTON BLVD., CHICAGO 6, ILL.

NOW AVAILABLE on display in St. Louis

Aero Commander—

Just taken in trade on a new Remmert-Werner deluxe executive DC3. A corporation airplane flown by professional pilots and given the best maintenance. Gyrosyn compass, Collins 17L VHF Transmitter, 51R3 omni and Radio Magnetic Indicator, A.R.C. omni, Bendix ADF, etc. On display in St. Louis.

Custom 18—

New ship guarantee on airframe, 800 hour guarantee on NTSO engines. Painted exterior, deicers, radome nose, Grimes beacon, all large cabin windows, Custom 18 enlarged interior, with modified front bulkhead, lavatory, snack bar, special seats. Dual instrumentation electric and vacuum, L2 autopilot, Grimes lights, Sperry H5 horizon and C2 gyrosyn compass, dual inverters. Collins 51R omni with 51V glideslope, A.R.C. omni 50 channel VHF Transceiver, standby A.R.C. T20 VHF Transmitter, Bendix ADF, 3 light marker, isolation amplifier, dual speakers, many extras. On display in St. Louis.

Grumman Goose—

Freshly overhauled airframe, props, and engines (with crankshaft modification), new interior, new exterior paint. Lightweight, late model. Omni, VHF, ADF, etc. On display in St. Louis.

Grumman Gooses—

Now in various stages of overhaul, ready for your own specifications. On display in Pompano Beach.

Airline DC3—

Ready to go, with dual instrumentation, dual Collins omni, dual ADF, ILS, VHF communications, airline interior, galley, deicers, airstair, Janitrol, etc. On display in St. Louis.

Low Time C47s—

Now in various stages of disassembly, overhaul, and conversion and can be completed with many of your own modifications, with choice of engines, radio and electronic, and airframe refinements. On display in St. Louis, Toledo and Pompano Beach.

Super-92 DC3—

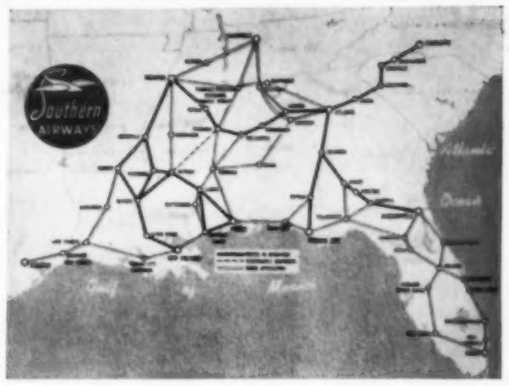
Completely disassembled and rebuilt, with new ship guarantee on airframe, 800 hour guarantee on engines. Spacious comfort for passengers and crew, can still incorporate your own custom specifications. Flush loops, retractable tail wheel, lightweight landing gear doors. Collins and Bendix radio. The best in Business aircraft. Fast and Quiet.

Remmert-Werner

Inc. of
ST. LOUIS
Lambert Field

Inc. of
TOLEDO
Express Airport

Inc. of
FLORIDA
Pompano Beach



Southern Airways Route Map gives an indication of outfit's size and its burgeoning growth.

FOR SOUTHERN AIRWAYS, INC.

"After 8 years of steady growth it's still Texaco Aircraft Engine Oil"

"Since the first flight on June 10, 1949, Southern Airways' airplanes have flown in excess of 300,000 engine hours with extremely satisfactory results from Texaco lubricating products," *says George M. Gross, Southern's Superintendent of Maintenance.*

Southern Airways is far from alone in its acceptance of *Texaco Aircraft Engine Oil:*

During the last twenty-two years more scheduled revenue airline miles in the United States have been flown with *Texaco Aircraft Engine Oil* than with all other brands combined.

For Southern Airways, the reasons go deeper than Texaco's recognized high quality. "The service and engineering assistance provided by Texaco has been most helpful in solving maintenance problems," concluded Maintenance Superintendent Gross.

Whatever your problem, talk it over with a Texaco Aviation Representative. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States—or write:

The Texas Company, *Aviation Division,* 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

FOR THE AVIATION INDUSTRY